ORDER NO. HAD8507202C8

Service Manual

DC Servo Automatic
Turntable System

Turntable System

SL-J11

Color

(S)..... Silver Type
(K) .... Black Type

T4P is the standard mark for plug-in-connector type.
Products carrying this mark are interchangeable and adaptable among each other.

Color	Areas
(S) (K)	[E] ..... Switzerland and Scandinavia.
(S) (K)	[EK].... United Kingdom.
(S) (K)	[XL] .... Australia.
(S) (K)	[EG] ... F.R. Germany.
(S) (K)	[EB].... Belgium.
(S) (K)	[EH].... Holland.
(S) (K)	[EF] .... France.
(S) (K)	[Ei]..... Italy.
(S) (K)	[EC].... Czechoslovakia.

SPECIFICATIONS

■ Turntable section

Type:	Belt drive Automatic turntable
Features:	Auto start Auto return Forward search play Backward search play Repeat play
Drive method:	Belt drive
Motor:	DC motor
Turntable platter:	Aluminum die-cast Diameter 30 cm
Turntable speeds:	33-1/3 rpm and 45 rpm
Wow and flutter:	0.045% WRMS (JIS C5521) ±0.06% peak (IEC 98A Weighted)
Rumble:	−70 dB (IEC 98A Weighted)

■ Tonearm section

Type:	Linear tracking tonearm Plug-in-connector type
Effective length:	10.5 cm
Tracking error angle:	Within ±0.1°
Tonearm drive motor:	DC motor
Stylus pressure:	1.25 g (fixed)
Phone cable capacitance:	120 pF

■ Cartridge section

Model no.:	EPC-P30S
Type:	Moving magnet stereo cartridge Plug-in-connector type
Magnetic circuit:	All-laminated core
Frequency response:	10 Hz ~ 35 kHz
Output voltage:	2.5 mV at 1 kHz, 5 cm/s. zero to peak lateral velocity (7 mV at 1 kHz, 10 cm/s. zero to peak 45° velocity [DIN 45 500])
Channel separation:	22 dB at 1 kHz
Channel balance:	Within 2 dB at 1 kHz
Recommended load impedance:	47 kΩ ~ 100 kΩ
Compliance (dynamic):	12×10^{-6}cm/dyne at 100 Hz
Stylus pressure range:	1.25±0.25 g (12.5±2.5 mN)
Weight:	6 g (cartridge only)
Replacement stylus:	EPS-30CS

■ General

Power supply:	For United Kingdom and Australia: AC 240 V, 50 Hz For continental Europe: AC 220 V, 50 Hz
Power consumption:	7W
Dimensions: (W×H×D)	31.5 × 8.8 × 31.5 cm (Maximum height when the dust cover is open: 39 cm)
Weight:	3.3 kg

Specifications are subject to change without notice for further improvement.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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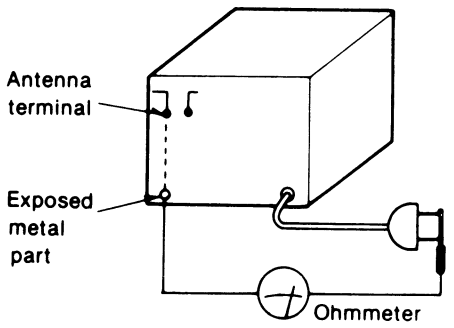
■ SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• INSULATION RESISTANCE TEST

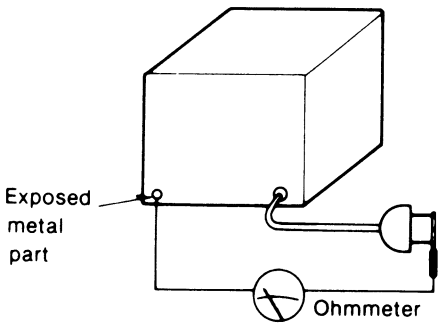
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads, antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = 3MΩ—5.2MΩ



(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

ORDER NO. HAD8507202C8-A

DC Servo Automatic Turntable System

SL-J11

DEUTSCH

- This booklet includes the specifications and adjustment of Model SL-J11 (Order No. HAD8507202C8) written in German, French and Spanish.
- File this booklet together with the service manual of Model SL-J11.

- Dieses Büchlein umfaßt die technischen Daten und Justierungsanleitungen von Modell SL-J11 (Bestell Nr. HAD8507202C8) in den Sprachen Deutsch, Französisch und Spanisch.
- Bewahren Sie dieses Büchlein zusammen mit dem Service-Handbuch von Modell SL-J11.

- Cette brochure comprend les spécifications et la mise au point du Modèle SL-J11 (N° d'Ordre HAD8507202C8) écrites en allemand, en français et en espagnol.
- Classer cette brochure en même temps qu'avec le manuel de service du Modèle SL-J11.

- Este librito incluye las especificaciones y ajuste de Modelo SL-J11 (Pedido N° HAD8507202C8) escritas en alemán, francés y español.
- Guardar este librito juntamente con el manual servicio de Modelo SL-J11.

DEUTSCH

■ TECHNISCHE DATEN (Spezifikationen Können infolge von Verbesserungen ohne Ankündigung geändert werden.)

■ Plattenteller

Typ:	Automatischer Plattenteller mit Riemenantrieb
Eigenschaften:	Auto-Start Auto-Rückkehr Vorwärts- und Rückwärts-Suche Wiederholtes Abspielen
Antrieb:	Riemenantrieb
Motor:	Gleichstrommotor
Plattenteller:	Aluminium-Druckguß Durchmesser 30 cm
Plattenteller-Drehzahlen:	33-1/3 und 45 U./min
Gleichlaufschwankungen:	0,045% WRMS (JIS C5521) ±0,06% Spitze (IEC 98A bewertet)
Rumpeln:	−70 dB (IEC 98A bewertet)

■ Tonarm

Typ:	Linearabtastungs-Tonarm mit Einsteck-Typ [T4P] Tonabnehmer
Effektive Länge:	10,5 cm
Spurfehlwinkel:	Innerhalb ±0,1°
Tonarm-Antriebsmotor:	Gleichstrommotor
Nadeldruck:	1,25 g (nicht einstellbar)
Phonokabel-Kapazität:	120 pF

■ Tonabnehmer

Modell Nr.	EPC-P30S
Typ:	Beweglicher Magnet-Stereotonabnehmer vom Einstecktyp [T4P]
Magnetkreis:	Ganzlamellenkern
Frequenzgang:	10 Hz bis 35 kHz
Ausgangsspannung:	2,5 mV bei 1 kHz 5 cm/s. Null-zu-Spitze, lateral [7 mV bei 1 kHz 10 cm/s. Null-zu-Spitze, 45° (DIN 45 500)]
Kanaltrennung:	22 dB bei 1 kHz
Kanalabweichung:	Innerhalb 2 dB bei 1 kHz
Empfohlene Endimpedanz:	47 kΩ~100 kΩ
Nachgiebigkeit (dynamisch):	12×10^{-6}cm/dyn bei 100 Hz
Nadeldruckbereich:	1,25±0,25 g (12,5±2,5 mN)
Gewicht:	6 g (nur Tonabnehmer)
Ersatznadel:	EPS-30CS

■ Allgemeine Daten

Stromversorgung:	~220V, 50 Hz
Leistungsaufnahme:	7W
Abmessungen: (B×H×T)	31,5 × 8,8 × 31,5 cm (Maximale Höhe bei vollständig geöffnetem Gehäuseoberteil: 39 cm)
Gewicht:	3,3 kg

■ MESSUNGEN UND JUSTIERUNGEN

Verwendete Geräte und Zustand des Gerätes

- Plattengröße-Wahlschalter.....30
- Oszilloskop
- Gleichstrom-Voltmeter
- 30cm-Schallplatte

STARTPOSITION

1. Ein 30 cm-Schallplatte auflegen.
2. Den Netzschalter auf "On" stellen und die Start-Taste drücken.
3. Wenn die Nadel zu weit innen oder zu weit außen auf der Platte aufsetzt, ist die Startposition durch Drehen der Justierschraube zu justieren.
   - **Im Uhrzeigersinn** ..... Der Nadelaufsetzpunkt wird nach innen verschoben.
   - **Entgegen dem Uhrzeigersinn** ..... Der Nadelaufsetzpunkt wird nach außen verschoben.

UHRFREQUENZ

1. Die Bodenabdeckung entfernen.
2. Die Stift 7, 8, 9 und 10 und Stift 27 (+5V) von IC301 verbinden.
3. Das Oszilloskop an IC301, Stift 4 anschließen.
4. Den Netzschalter auf "On" stellen und **VR301** so justieren, daß der Ausgangswellenform-Zylus **30±1μsec** beträgt.

SERVO-VERSTÄRKUNG UND OFFSETSPANNUNG

1. Die Staubabdeckhaube entfernen.
2. Das Gleichstrom-Voltmeter an BT501, Stift 2 und Stift 4 anschließen.
3. Den Netzschalter auf "On" stellen.
4. **VR501** so justieren, daß die Spannung bei vollständig nach rechts gedrehtem Tonarm (Offsetwindel-Sensor "offen") **3,6 V** beträgt. (**Servo-Verstärkungs-Justierung**)
5. Den Tonarm in die Mitte zurückstellen und überprüfen, ob die Spannung **1,8 V** beträgt.
6. Falls die Spannung nicht **1,8 V** beträgt, so ist sie durch Drehen der Offsetspannungs-Justierschraube zu justieren. (**Offsetspannungs-Justierung**)

DREHZAHL

1. Den Drehzahl-Wahlschalter auf "**33**" U/min einstellen.
2. Den Netzschalter auf "On" stellen und die Start-Taste drücken.
3. **VR101** so justieren, daß der Plattenteller sich mit der Nenndrehzahl dreht. (**33-1/3 U/min**)
4. Den Drehzahl-Wahlschalter auf "**45**" U/min einstellen.
5. **VR102** so justieren, daß der Plattenteller sich mit der Nenndrehzahl dreht. (**45 U/min**)

Anmerkung: Die Justierung für 33-1/3 U/min muß unbedingt zuerst durchgeführt werden.

FRANÇAIS

■ CARACTÉRISTIQUES (Sujet à changement sans prearis.)

■ Section de la platine

Type:	Entraînement par courroie Système de platine automatique
Caractéristiques:	Démarrage automatique, Retour automatique/ Audition répétée, Audition de recherche vers l'avant, Audition de recherche vers l'arrière
Système d'entrainement:	Entraînement par courroie
Moteur:	Moteur C.C.
Plateau de lecture:	Aluminium moulé sous pression Diamètre 30 cm
Vitesses de la platine:	33-1/3 et 45 t/p.m.
Pleurage et scintillement:	0,045% WRMS (JIS C5521) ±0,06% de crête (IEC 98A Pondéré)
Ronflement:	−70 dB (IEC 98A pondéré)

■ Section du bras de lecture

Type:	Bras de lecture d'alignement linéaire de type à connecteur enfichable TAP
Longueur effective:	10,5 cm
Erreur d'angle d'alignement:	En deçà de ±0,1°
Moteur d'entrainement du bras de lecture:	Moteur C.C.
Force verticale d'appui:	1,25 g (fixé)
Capacitance du câble phono:	120 pF

■ Section de la cellule pick-up

N° du modèle:	EPC-P30S
Type:	Cellule pick-up stéréo à aimant mobile Type à connecteur enfichable TAP
Circuit magnétique:	Noyau entièrement feuilleté
Réponse en fréquence:	10 Hz à 35 kHz
Tension de sortie:	2,5 mV à 1 kHz; 5 cm/s. zéro à vitesse latérale de crête [7 mV à 1 kHz; 10 cm/s. zéro à vitesse 45° de crête (DIN 45 500)]
Séparation des canaux:	22 dB à 1 kHz
Equilibrage des canaux:	En deçà de 2 dB à 1 kHz
Impédance de charge recommandée:	47 kΩ~100 kΩ
Elasticité acoustique: (dynamique)	12×10^{-6} cm/dyne à 100 Hz
Plage de la force verticale d'appui:	1,25±0,25 g (12,5±2,5 mN)
Poids:	6 g (cellule seule)
Remplacement de la pointe de lecture:	EPS-30CS

■ Généralités

Alimentation:	220V C.A. 50 Hz
Consommation:	7W
Dimensions: (L×H×P)	31,5 × 8,8 × 31,5 cm (Hauteur maximum lorsque le couvercle protège-poussière est ouvert: 39 cm)
Poids:	3.3 kg

■ MESURAGES ET RÉGLAGES

Équipement utilisé et conditions de service de l'appareil

- Sélecteur du diamètre de disques.....30
- Oscilloscope
- Voltmètre à C.C.
- Disque de 30 cm

POSITION DE DÉMARRAGE

1. Placer un disque de 30 cm.
2. Tourner l'interrupteur d'alimentation sur "on" (en circuit), et appuyer sur la touche de démarrage.
3. Si la pointe de lecture s'abaisse trop à l'intérieur ou à l'extérieur du disque, régler la position de démarrage en tournant la vis de mise au point.
   - **Sens des aiguilles d'une montre** ..... La position de descente de la pointe de lecture se déplace vers l'intérieur.
   - **Sens inverse des aiguilles d'une montre**... La position de descente de la pointe de lecture se déplace vers l'extérieur.

FRÉQUENCES DES IMPULSIONS DE RYTHME

1. Retirer le panneau de la face inférieure.
2. Raccorder les broches 7, 8, 9, 10 et 27 (+5V) de IC301.
3. Brancher l'oscilloscope à la broche 4 de IC301.
4. Tourner l'interrupteur d'alimentation sur "on" (en circuit) et régler **VR301** de telle sorte que le cycle de la forme d'onde de sortie soit de **30±1μsec**.

AMPLIFICATION SERVO-MÉCANIQUE ET TENSION D'ÉCART DE RÉGLAGE

1. Retirer le couvercle protège-poussière.
2. Raccorder un voltmètre à C.C. à la broche 2 et à la broche 4 de BT501.
3. Tourner l'interrupteur d'alimentation sur "on" (en circuit).
4. Régler **VR501** de telle sorte que la tension soit de **3,6 V** avec le bras de lecture complètement tourné à droite (dispositif de détection de l'angle de décalage "ouvert"). (**Réglage de l'amplification servo-mécanique**)
5. Faire revenir le bras de lecture vers le centre et s'assurer que la tension soit de **1,8 V**.
6. Si la tension n'est pas de **1,8 V**, la régler en tournant la vis de mise au point de tension de décalage. (**Réglage de la tension de décalage**)

VITESSE DE ROTATION

1. Régler le commutateur-sélecteur de vitesse sur "**33**" t/p.m.
2. Tourner l'interrupteur d'alimentation sur "on" (en circuit) et appuyer sur la touche de démarrage.
3. Régler **VR101** de telle sorte que le plateau de lecture tourne à la vitesse nominale de rotation (**33-1/3 t/p.m.**).
4. Régler le commutateur-sélecteur de vitesse sur "**45**" t/p.m.
5. Régler **VR102** de telle sorte que le plateau de lecture tourne à la vitesse nominale de rotation (**45 t/p.m.**).

Nota: S'assurer d'effectuer tout d'abord le réglage pour 33-1/3 t/p.m.

ESPAÑOL

■ ESPECIFICACIONES (Estas especificaciones están sujetas a cualquier cambio sin previo eviso.)

■ Sección del plato giratorio

Tipo:	Plato giratorio totalmente automático por accionamiento por correa
Ventajas:	Arranque automático Retorno automático Ejecución con búsqueda hacia adelante Ejecución con búsqueda hacia atrás Ejecución repetida
Método de accionamiento:	Accionamiento por correa
Motor:	Motor de corriente continua
Platillo del plato giratorio:	Aluminio fundido 30 cm de diámetro
Velocidades del plato giratorio:	33-1/3 y 45 rpm
Ululaciones y trémolo:	0,045% WRMS (JIS C5521) ±0,06% cresta (IEC 98A Ponderado)
Ruido de rodadura:	−70 dB (IEC 98A Ponderado)

■ Sección del brazo sonoro

Tipo:	Brazo sonoro de seguimiento lineal tipo conector enchufable 4P
Longitud efectiva:	10,5 cm
Angulo de error de seguimiento:	Inferior a 0,1° aproxim.
Motor de accionamiento del brazo sonoro:	Motor de corriente continua
Presión de la aguja:	1,25 g (fija)
Capitancia del cable del fonógrafo:	120 pF

■ Sección del cartucho

Núm. del modelo:	EPC-P30S
Tipo:	Cartucho estereofónico de imán móvil tipo conector enchufable 4P
Circuito magnético:	Núcleo totalmente laminado
Respuesta de frecuencia:	10 Hz a 35 kHz
Voltaje de salida:	2,5 mV a 1 kHz Velocidad lateral de cero a cresta de 5 cm/s (7 mV a 1 kHz, Velocidad de 45° de cero a cresta de 10 cm/s [DIN 45 500])
Separación de canales:	22 dB a 1 kHz
Equilibrio de canales:	Inferior a 2 dB a 1 kHz
Impedancia de carga recomendada:	47 kΩ a 100 kΩ
Elasticidad (dinámica):	12×10^{-6}cm/dina a 100 Hz
Radio de presión de la aguja:	1,25±0,25 g (12,5±2,5 mN)
Peso:	6 g (cartucho solamente)
Aguja de recambio:	EPS-30CS

■ En general

Alimentación de corriente:	C.A. de 220 V, 50 Hz
Consumo de corriente:	7W
Dimensiones: (Ancho×Alto×Prof.)	31,5 × 8,8 × 31,5 cm (Altura máxima cuando la tapa contra el polvo está abierta: 39 cm)
Peso:	3,3 kg

■ MEDICIONES Y AJUSTE

Equipos usados y estado del aparato

- Selector de tamaño de discos.....30
- Osciloscopio
- Voltímetro de corriente continua
- Disco de 30 cm

POSICIÓN DE ARRANQUE

1. Colocar un disco de 30 cm.
2. Prender el interruptor de alimentación y apretar el botón de arranque.
3. Si la aguja cae demasiado dentro o demasiado fuera del disco, ajustar la posición de arranque girando el tornillo de ajuste.
   - **A la derecha** ..... Posición de caída de aguja es cambiada adentro.
   - **A la izquierda**..... Posición de caída de aguja es cambiada afuera.

FRECUENCIA DEL RELOJ

1. Remover el tablero inferior.
2. Conectar pernos 7, 8, 9 y 10 y perno 27 (+5V) de IC301.
3. Conectar el osciloscopio a perno 4 de IC301.
4. Prender el interruptor de alimentación y ajustar **VR301** de manera que el ciclo de forma de onda de salida sea **30±1μseg**.

CANANCIA DEL SERVOME CANISMO Y TENSIÓN DE DESNIVEL

1. Remover la tapa contra el polvo.
2. Conectar un voltímetro de CC a perno 2 y perno 4 de BT501.
3. Prender el interruptor de alimentación.
4. Ajustar **VR501** de manera que el voltaje sea **3,6 V** con el brazo del fonocaptor girado a la derecha (sensor de ángulo del fonocaptor "abierto"). (**Ajuste de servo ganancia**)
5. Volver el brazo del fonocaptor al centro y asegurarse de que el voltaje es **1,8 V**.
6. Si el voltaje no es **1,8 V**, ajustarlo girando el tornillo de ajuste de voltaje de desnivel. (**Ajuste de voltaje de desnivel**)

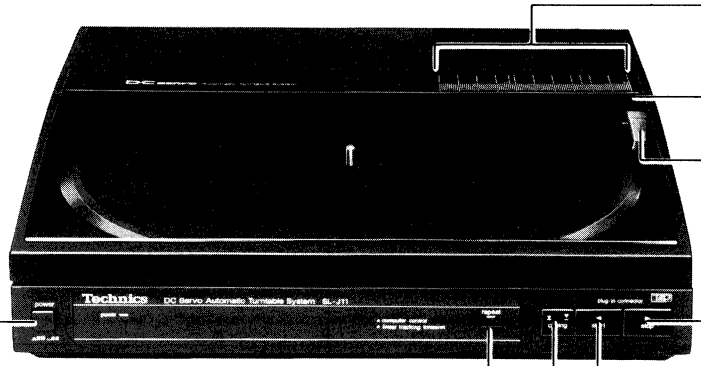
VELOCIDAD GIRATORIA

1. Ajustar el interruptor selector de velocidad a "**33**" rpm.
2. Prender el interruptor de alimentación y apretar el botón de arranque.
3. Fijar **VR101** de manera que el mecanismo de tornamesa gire a la velocidad de régimen. (**33-1/3 rpm**)
4. Fijar el interruptor selector de velocidad a "**45**" rpm.
5. Ajustar **VR102** de manera que el mecanismo de tornamesa gire a la velocidad de régimen. (**45 rpm**)

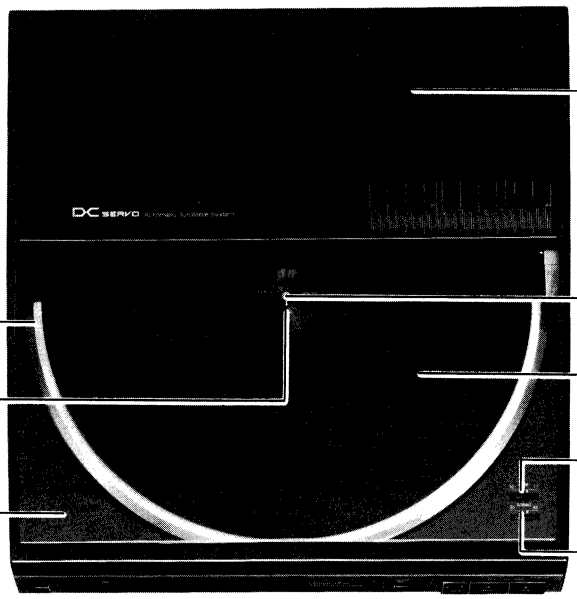
Nota: Asegúrese de hacer el ajuste para 33-1/3 rpm primero.

Printed in Japan
850703600 Ⓢ TK

■ LOCATION OF CONTROLS



Record groove scale
Tonearm
Cartridge
Power switch
Stop button
Start button
Cueing button
Repeat button and repeat indicator



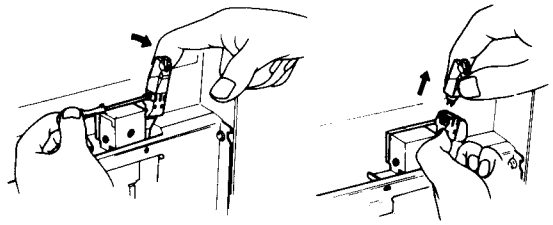
Upper cabinet (dust cover)
Turntable platter
Center spindle
45-rpm adaptor
Turntable mat
Record size selector
Lower cabinet
Speed selector

■ DISASSEMBLY INSTRUCTIONS

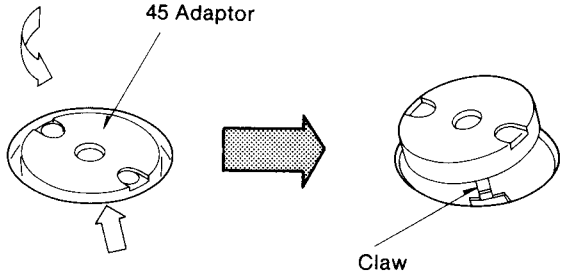
Note

- Please note that this unit does not employ a record detector. This means that the stylus will descend to the turntable platter when the start button or cueing button is pressed, regardless of the presence or absence of a record on the turntable, and appropriate of the presence or absence of a record on the turntable, and appropriate care should be taken.
- To prevent damage to the stylus tip, be sure to remove the cartridge when servicing.

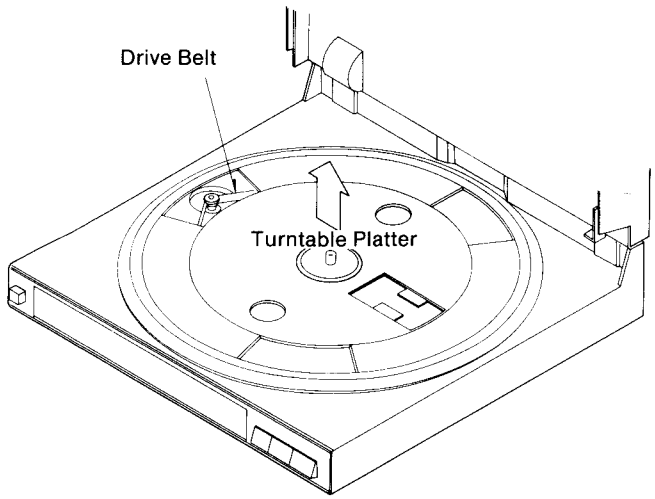
Ref. No 1	How to remove the cartridge
Procedure 1	1. Open the dust cover. 2. Remove the setscrew and pull out the cartridge.



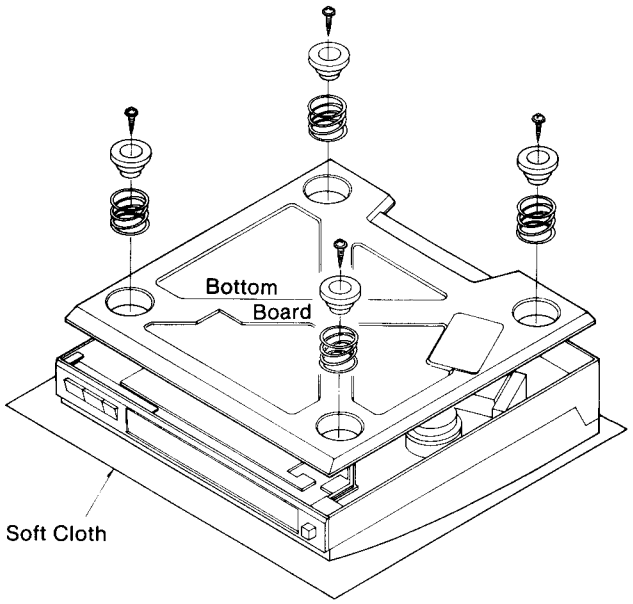
Ref. No 3	How to remove the 45 adaptor
Procedure 2 ➧ 3	• Turn the 45 adaptor counterclockwise and push the arrow-marked part to release the claw.



Ref. No 2	How to remove the turntable platter
Procedure 2	1. Open the dust cover. 2. Remove the turntable mat and drive belt. 3. Lift the turntable platter.

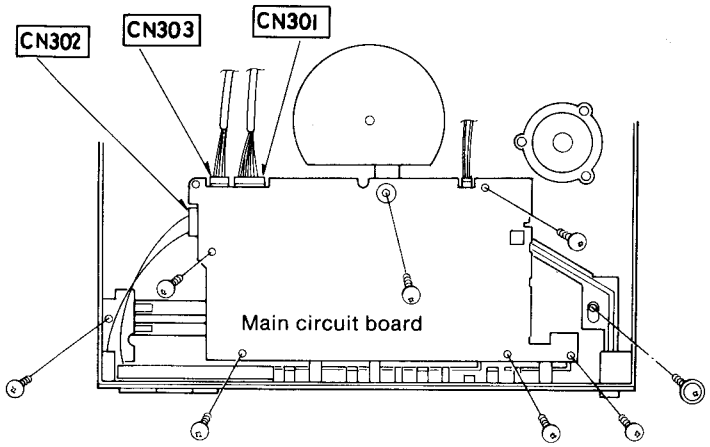


Ref. No 4	How to remove the bottom board
Procedure 2 ➧ 4	1. Turn over the unit on a soft cloth. 2. Remove the 4 setscrews.



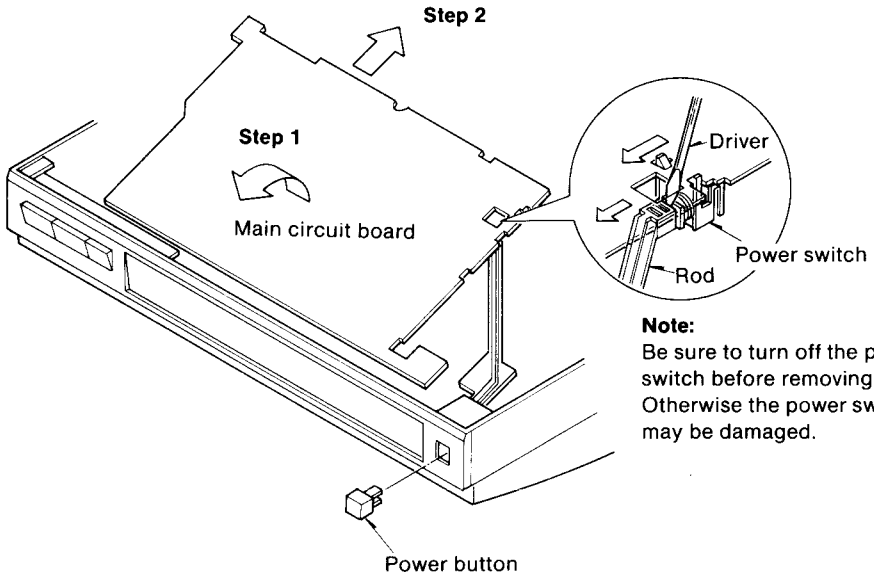
Ref. No 5	How to remove the main circuit board
Procedure 2 ➧ 4 ➧ 5	

1. Remove the 3 connectors (CN301~303).
2. Remove the 8 setscrews.
3. Raise the main circuit board and remove the power switch rod. **(Step 1)**
4. Remove the main circuit board in the direction of the arrow. **(Step 2)**



• Main circuit board fitting method

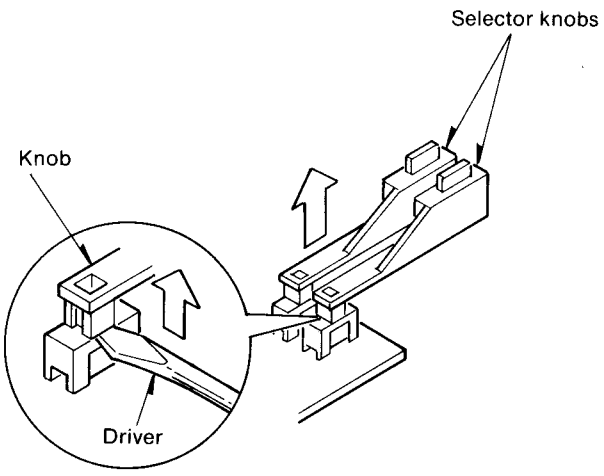
1. Remove the power button from the rod.
2. Fit the rod to the power switch of main circuit board.
3. Fit the main circuit board to the cabinet.
4. Fit the power button as shown.



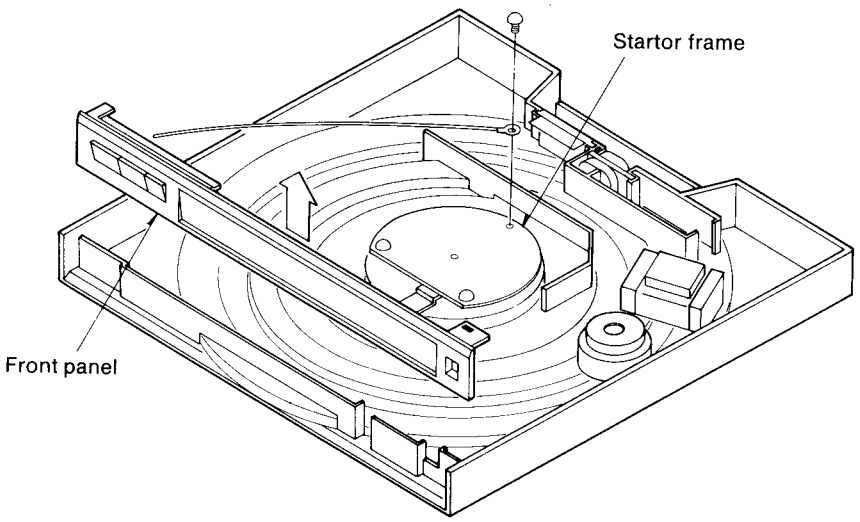
Note:
Be sure to turn off the power switch before removing the rod. Otherwise the power switch may be damaged.

• Selector knob removing method

1. Remove the main circuit board.
2. Insert a screwdriver between switch and knob.

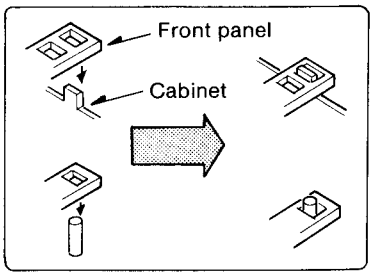


Ref. No 6	How to remove the front panel
Procedure 2 ▸ 4 ▸ 5 ▸ 6	1. Remove the earth lead setscrew of stator frame. 2. Lift the front panel.



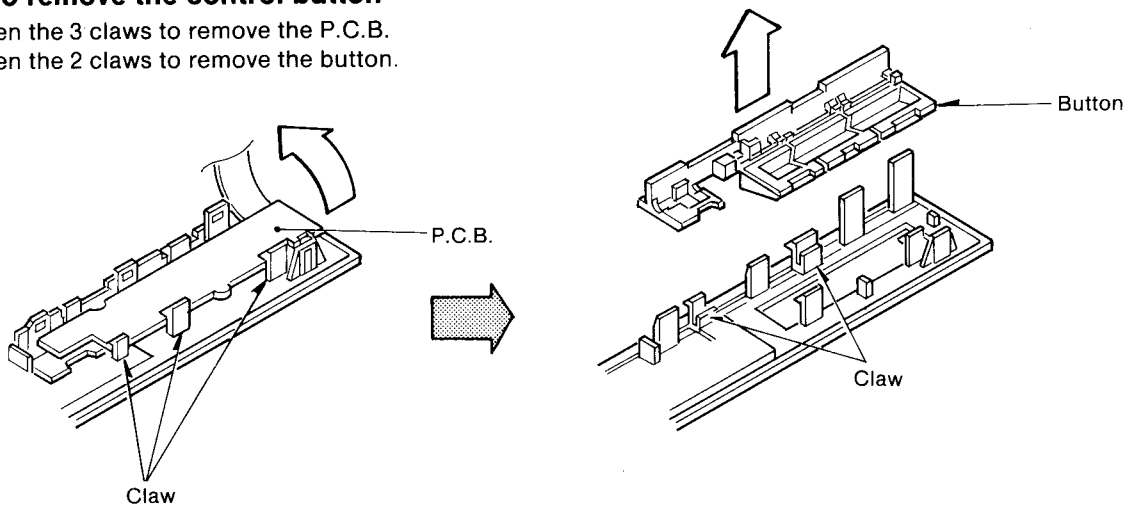
• Caution for fitting

Make sure that the front panel hook is correctly engaged with the cabinet boss.

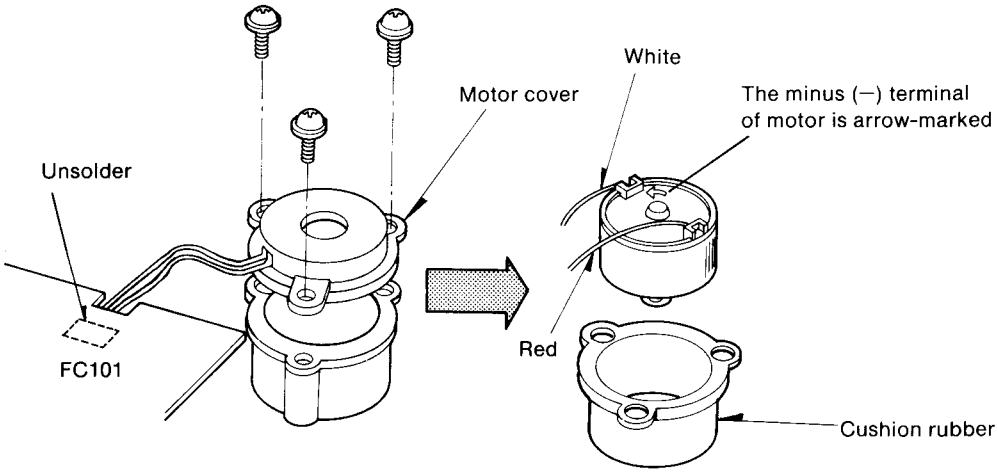


• How to remove the control button

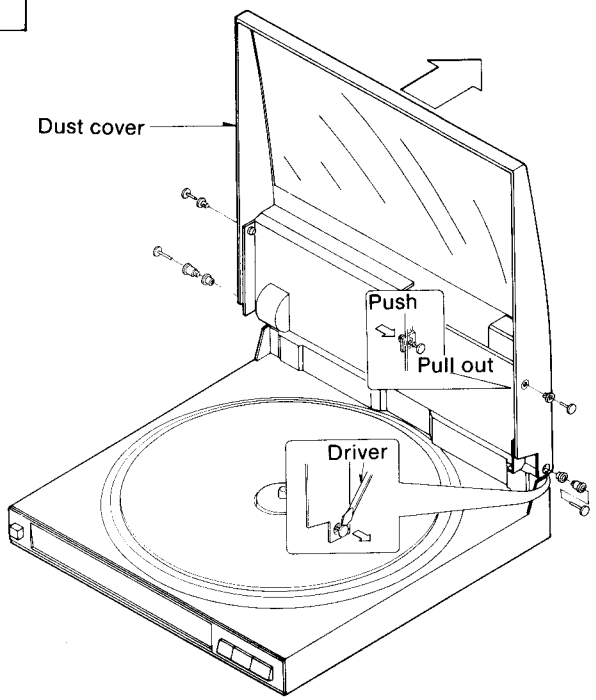
1. Unfasten the 3 claws to remove the P.C.B.
2. Unfasten the 2 claws to remove the button.



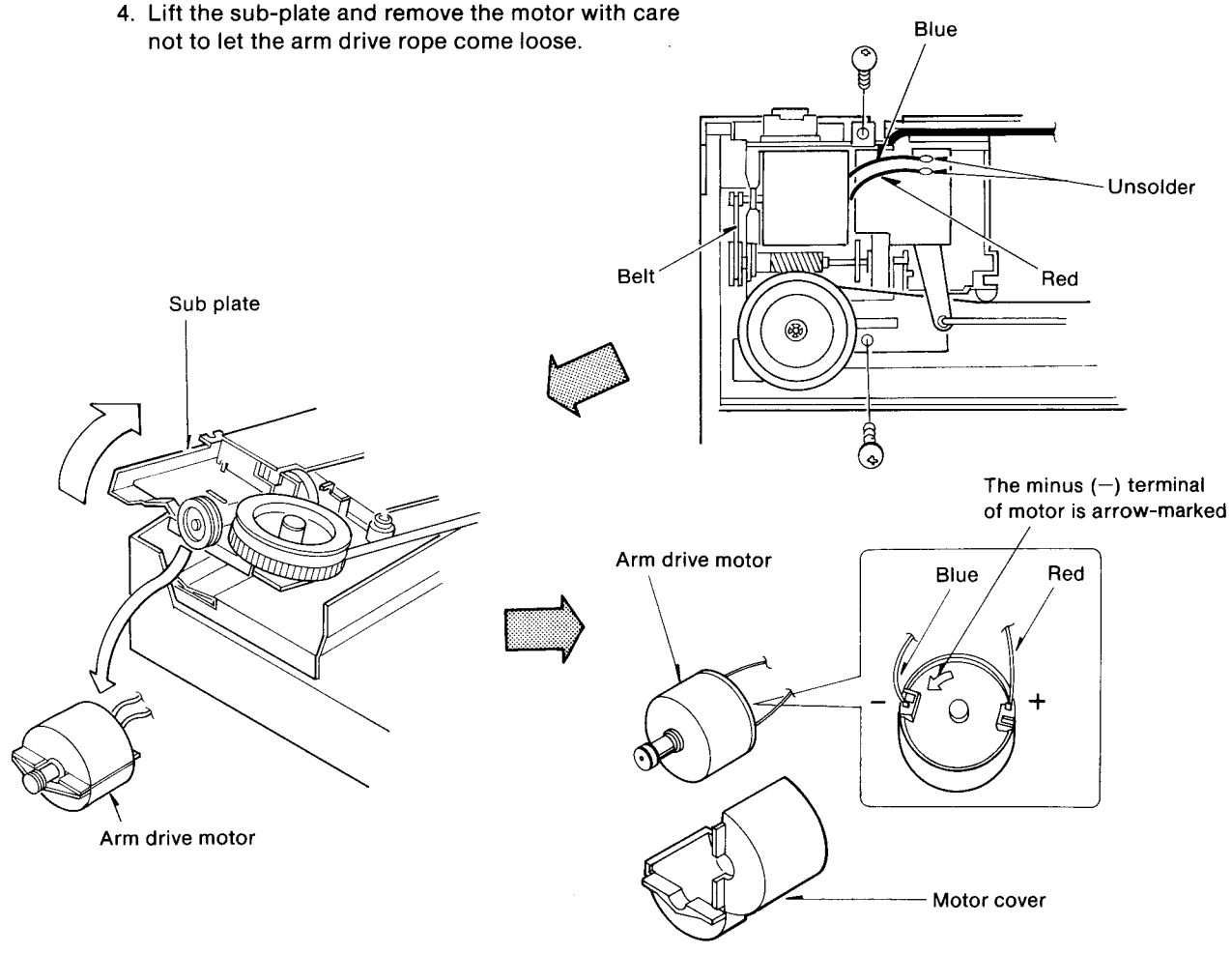
Ref. No 7	How to remove the turntable drive motor
Procedure 2 ▸ 4 ▸ 7	1. Unsolder the terminal (FC101) and 3 setscrews. 2. Remove the motor from cabinet. 3. Remove the cushion rubber.



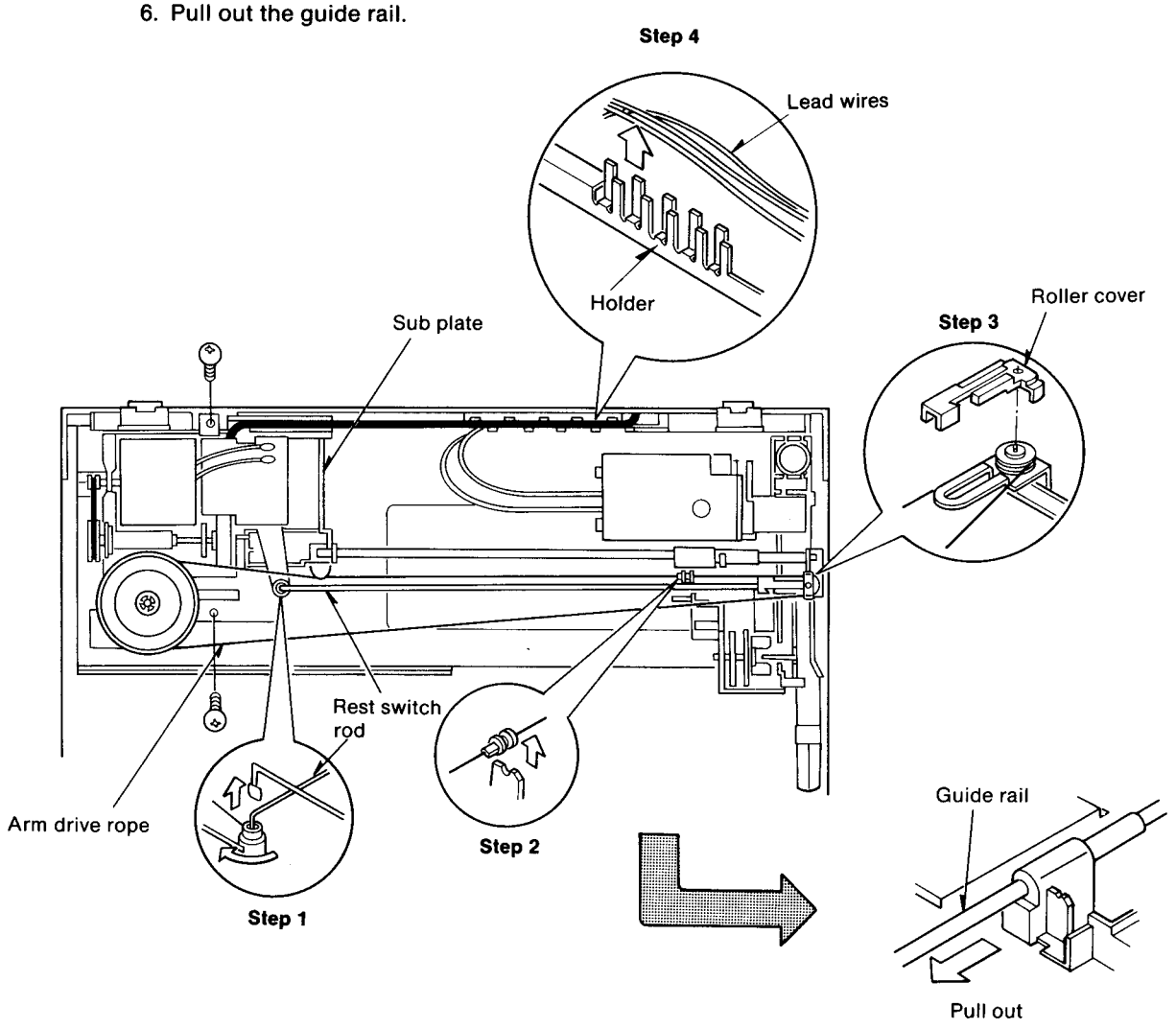
Ref. No 8	How to remove the dust cover
Procedure 8	1. Open the dust cover. 2. Remove the 4 plastic rivets.



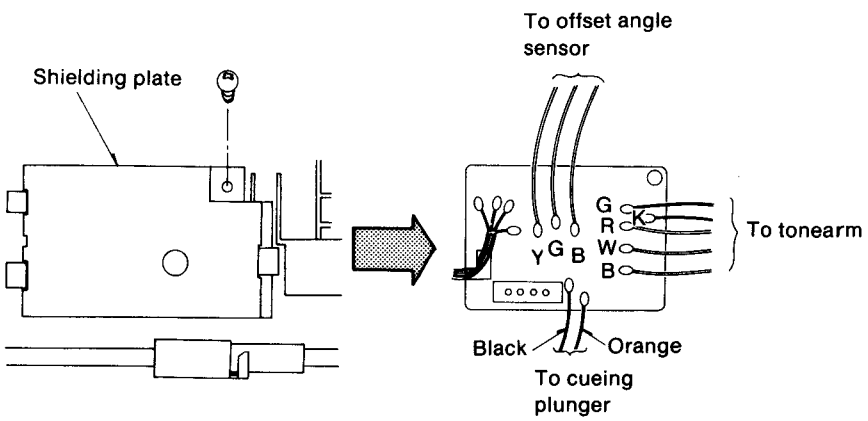
Ref. No 9	How to remove the arm drive motor
Procedure 8 ➧ 9	1. Remove the belt. 2. Unsolder the motor leads. 3. Remove the 2 setscrews of sub-plate. 4. Lift the sub-plate and remove the motor with care not to let the arm drive rope come loose.



Ref. No 10	How to remove the tonearm unit
Procedure 8 ➧ 10	1. Remove the rest switch rod. (**Step 1**) 2. Remove the arm drive rope. (**Step 2, 3**) 3. Disconnect the lead from the holder. (**Step 4**) 4. Remove the 2 setscrews of sub-plate. 5. Remove the guide rail from sub-plate. 6. Pull out the guide rail.



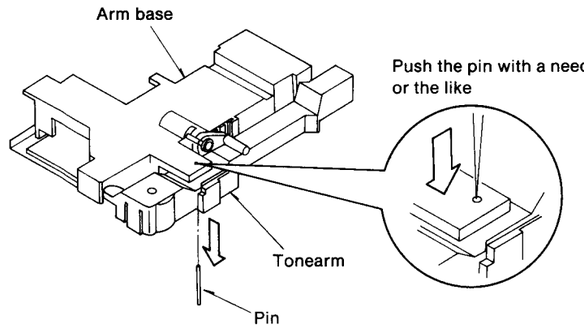
Ref. No 11	How to remove the tonearm
Procedure 8 ➧ 10 ➧ 11	1. Remove the setscrew of shielding plate. 2. Unsolder the 5 leads from tonearm.



P.C.B. marks and lead wore colors

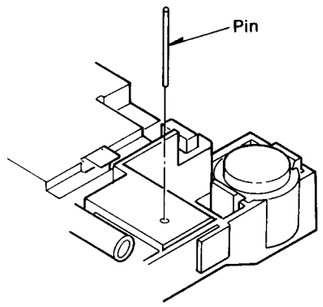
Mark	Color	Mark	Color
R	Red	W	White
G	Green	B	Blue
K	Black	Y	Yellow

3. Turn over the tonearm unit and remove the pin.



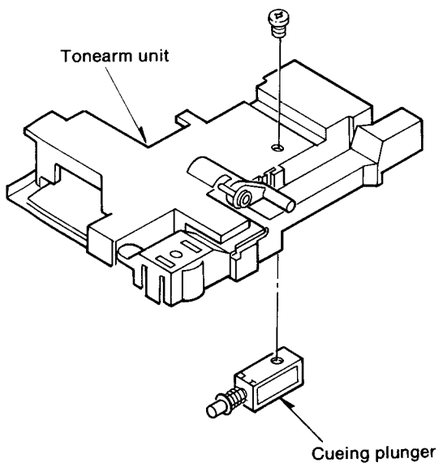
• Caution for tonearm fitting

Be sure to insert the pin from above the tonearm unit.



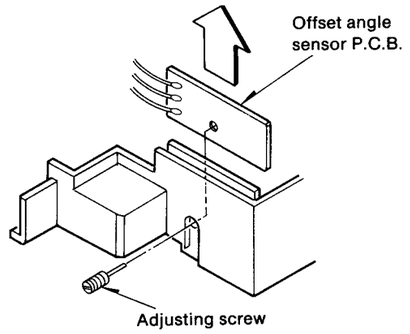
• How to remove the cueing plunger

1. Unsolder the 2 leads from plunger.
2. Turn over the tonearm unit and remove the setscrew.



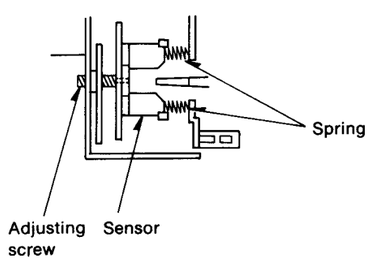
• How to remove the offset angle sensor

1. Unsolder the 3 leads from sensor.
2. Remove the adjusting screw. (After assembly, it is necessary to adjust the offset voltage.)



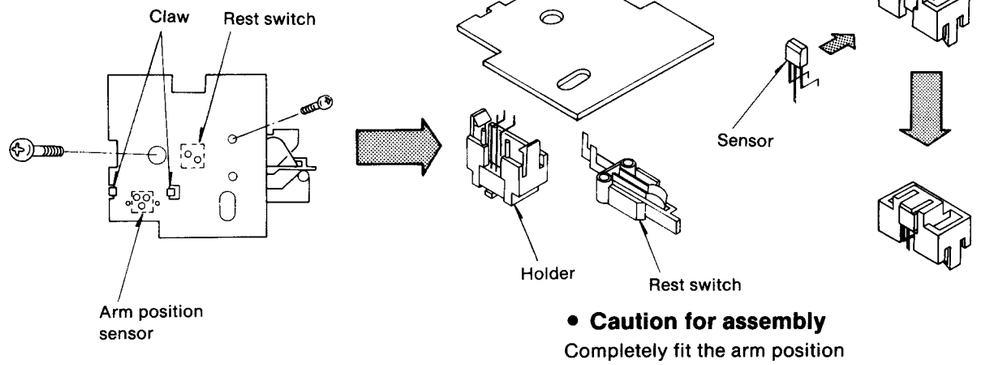
• Cautions for assembly

1. The adjusting screw should be aligned to the hole of P.C.B.
2. The springs should push the sensor.



Ref. No 12	How to remove the rest switch and arm position sensor
Procedure 8 ➧ 12	

1. Unsolder each terminal.
2. Remove the 2 setscrews.

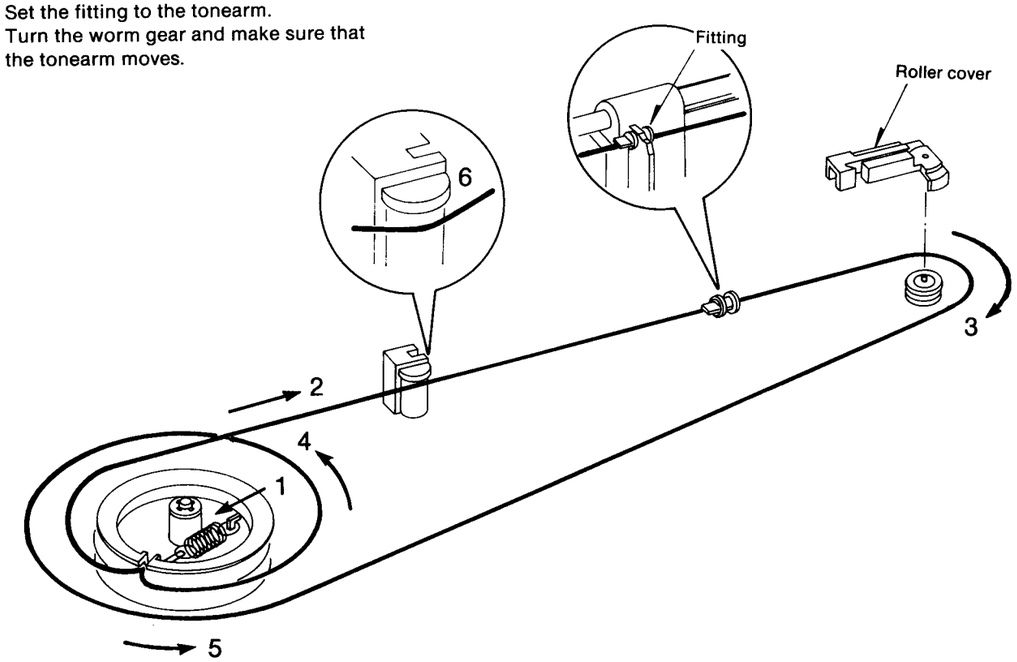


• Caution for assembly

Completely fit the arm position sensor onto the holder.

Ref. No 13	How to set the tonearm drive rope
Procedure 8 ➧ 13	

1. Remove the roller cover.
2. Set the rope in the order (**1 ➡ 6**) as shown.
3. Set the fitting to the tonearm.
4. Turn the worm gear and make sure that the tonearm moves.



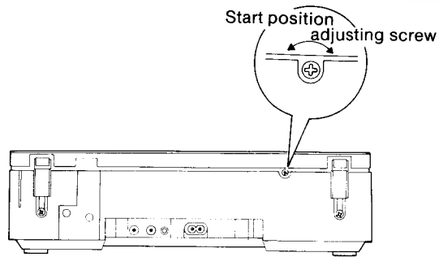
■ MEASUREMENTS AND ADJUSTMENTS

Control position and equipment used

- Size selector.....30
- Oscilloscope
- DC electronic voltmeter
- 30 cm record

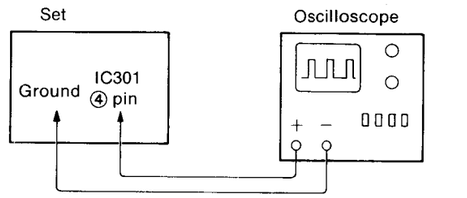
START POSITION ADJUSTMENT

1. Put on a 30 cm record.
2. Turn the power switch "on", and press the start button.
3. If the stylus drops too much inside or outside the record, adjust the start position by turning the adjusting screw.
   - **Clockwise** ..... Stylus drop position is shifted inside.
   - **Counterclockwise** ..... Stylus drop position is shifted outside.

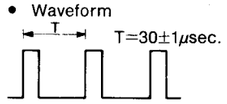


CLOCK FREQUENCY ADJUSTMENT

1. Remove the bottom board.
2. Connect IC301 pins 7, 8, 9 and 10 and pin 27 (+5V).
3. Connect the oscilloscope to IC301 pin 4.
4. Turn the power switch "on" and adjust **VR301** so that the output waveform cycle is **30±1μsec**.

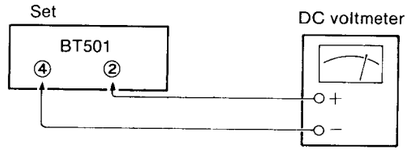


- Oscilloscope setting
  VOLT.....1V
  SWEEP.....10μsec.
  INPUT.....DC
- Waveform

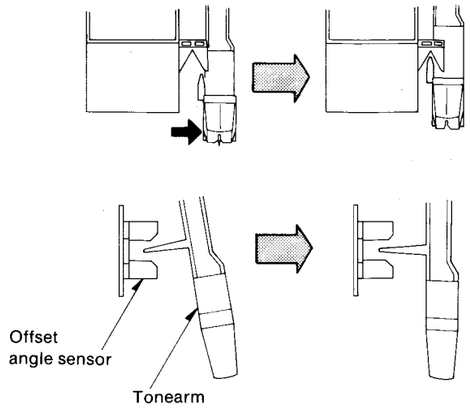


SERVO GAIN AND OFFSET VOLTAGE ADJUSTMENT

1. Remove the dust cover.
2. Connect DC voltmeter to BT501 pin 2 and pin 4.
3. Turn the power switch "on".
4. Turn the **VR501** so that the voltage is **3.6V** with tonearm completely turned to the right (offset angle sensor "open"). (**Servo gain adjustment**)
5. Return the tonearm to the center and make sure that the voltage is **1.8V**.
6. If the voltage is not **1.8V**, adjust it by turning the offset voltage adjusting screw. (**Offset voltage adjustment**)



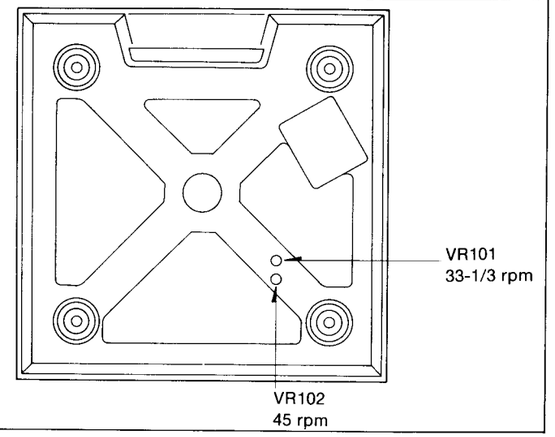
- Tonearm turns to the right
- Tonearm at center



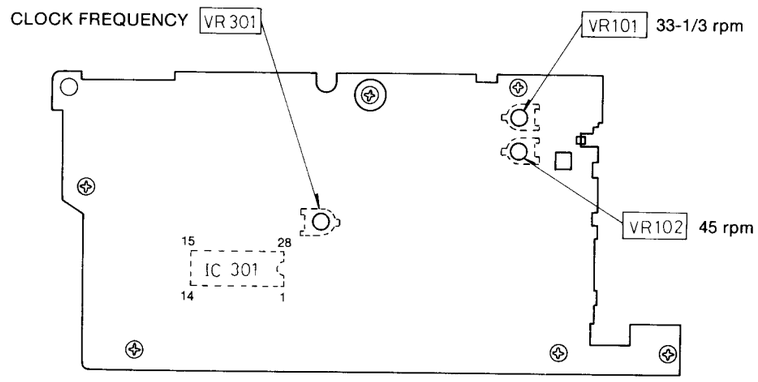
ROTATING SPEED ADJUSTMENT

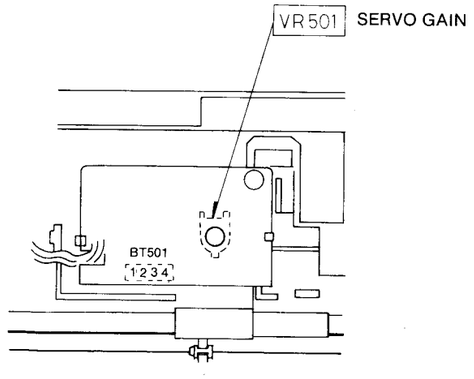
1. Open the dust cover.
2. Set the speed selector to "**33**".
3. Turn the power switch "on" and press the start button.
4. Adjust **VR101** so that the turntable platter rotates at the rated speed. (**33-1/3 rpm**)
5. Set the speed selector to "**45**".
6. Adjust **VR102** so that the turntable platter rotates at the rated speed. (**45 rpm**)

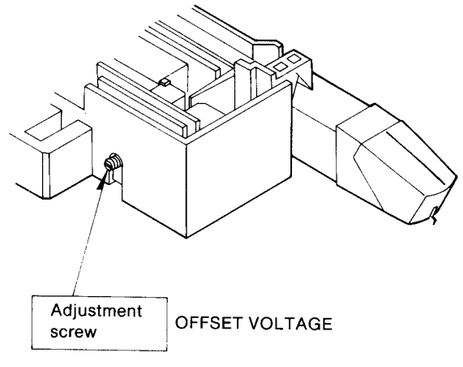
Note: Be sure to adjust 33-1/3 rpm first.



- **Adjustment Points**







■ TROUBLESHOOTING

Turntable does not rotate.

Belt is set over the turntable capstan? — NO → Set the belt correctly.

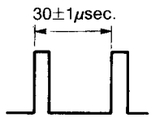
YES

Power source circuit
1. AC 17~20V between FC1 pins ① and ②.
2. DC voltage of regulator IC (IC1).
   ① 22.7V ② 0V ③ 12V
3. DC voltage of transistor (Q1)
   Ⓒ 10.5V Ⓑ 5.6V Ⓔ 5V

NO → T1, D1~4, IC1, Q1, D6, RF1 } defective

YES

Clock frequency
- IC301 pin ⑦, ⑧, ⑨, ⑩ and ㉗ connected.
- Waveform of pin ④ of IC301.



NO → IC301, VR301, C301, R310 } defective

YES

Start/stop circuit
1. DC voltage of pin ㉔ of IC301 .....0.7V
2. DC voltage of collector of Q301 .....1V

Push start switch (S301).

NO → S301, Q310, IC301, Q301, Q101 } defective

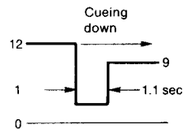
YES

Turntable drive circuit
1. DC voltage between IC101 pins ③ and ①..... 1.0~1.4V
2. DC voltage between FC101 pins ① and ②..... 3.0~4.5V (33 rpm) 4.0~5.5V (45 rpm)

NO → IC101, VR101, VR102, R101~104 } defective

Cueing down/ up does not work.

Cueing control circuit
1. DC voltage at pins ② and ③ of IC301
   Pin ②.....During cueing and down (0.8V)
   Pin ③.....Only during cueing down (1.6V)
2. DC voltage of collector of Q304



NO → IC301, Q303, Q304, S303, Plunger } defective

Arm motor does not rotate

Arm drive belt is correctly set? — NO → Set the belt correctly.

YES

Arm motor control circuit
- DC voltage at each pin of IC301

Condition	Pin No.			
	15	16	17	18
Stop	5	5	1.2	1.3
Lead-in	0	5	0	1.3
Return	5	0	1.2	0

NO → IC301, S301, S302 } defective

YES

Arm motor drive circuit
- DC voltage of Q401 ~ 404

Condition	Q401		Q403	
	B	E	B	C
Stop	0.8	0.6	1.2	0.6
Lead-in	10	9.4	0	9.4

Condition	Q402		Q404	
	B	E	B	C
Stop	0.8	0.6	1.3	0.6
Lead-in	10	9.4	0	9.4

NO → Q401~404, IC401, Arm motor } defective

No return

Arm position detection circuit
1. DC voltage of holl IC (IC2)
   ① 12V ② 0V ③ 4.5V or 0V
2. Waveform of IC2 pin ③during arm motor rotation. (High speed)

NO → IC2, IC301 } defective

■ REPLACEMENT PARTS LIST

Notes:

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice:
   Components identified by ⚠ mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
3. Unless otherwise specified.
   All resistors are in OHMS (Ω) K=1000Ω, M=1000kΩ
   All capacitors are in MICROFARADS (μF), P=10^{-6}μF.
4. Ⓚ-marked parts are used for black only, while ○-marked parts are for silver type only.
5. Part other than Ⓚ-and ○-marked are used for both black and silver type.
6. Bracketed indications in Ref. No. columns specify the area.
   Parts without these indications can be used for all areas.
7. The "Ⓢ" mark is service standard parts and may differ from production parts.
8. The parenthesized numbers in the column of description stand for the quantity per set.

Color

(S)..... Silver Type
(K) .... Black Type

Color	Areas
(S) (K)	[E] ..... Switzerland and Scandinavia.
(S) (K)	[EK].... United Kingdom.
(S) (K)	[XL] .... Australia.
(S) (K)	[EG] ... F.R. Germany.
(S) (K)	[EB].... Belgium.
(S) (K)	[EH].... Holland.
(S) (K)	[EF] .... France.
(S) (K)	[Ei]..... Italy.
(S) (K)	[EC].... Czechoslovakia.

• Resistors and Capacitors

Numbering System of Resistor

Example

ERD	S2	T	J	101
Type	Wattage	Shape	Tolerance	Value
(Carbon)	(1/4W)		(±5%)	(100Ω)
ERG	1	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value
(Metol Oxide)	(1W)		(±2%)	(2.2Ω)
ERD	2	FC	G	101
Type	Wattage	Shape	Tolerance	Value
(Carbon)	(1/4W)	Peculiarity	(±2%)	(100Ω)

Numbering System of Capacitor

Example

ECE	A or B	0J	U	470	
Type	Shape	Voltage	Peculiarity	Value	
(Electrolytic)		(6.3V)	use	(47μF)	
ECQ	G	1	223	K	Z
Type	Peculiarity	Voltage	Value	Tolerance	Shape
(Plastic Film)		(100V D.C)	(0.022μF)	(±10%)	
ECK	R	1H	473	Z	V
Type	Shape	Voltage	Value	Tolerance	Peculiarity
(Ceramic)		(50V D.C)	(0.047μF)	(±20%)	

Type		Voltage		Tolerance
		ECE Type	Others	
ECE	: Electrolytic	0J : 6.3V	1C : 16V D.C	K : ±10%
ECK, ECF, ECC	: Ceramic	1A : 10V	1E : 25V D.C	Z : +80% −20%
		1C : 16V	05 : 50V D.C	
		1E : 25V	1H : 50V D.C	
ECQ	: Plastic Film	1V : 35V	1 : 100V D.C	
		1H : 50V		
		1J : 63V		

Ref. No.	Part No.	Value
RESISTORS		
RF1	⚠ ERD2FCG330	33
RF401	⚠ ERD2FCG180	18
R1	ERDS2TJ681	680
R2	ERDS2TJ221	220
R3	ERDS2TJ821	820
R4	ERDS2TJ122	1.2K
R101	ERDS2TJ182	1.8K
R102	ERDS2TJ102	1K
R103, 104	ERDS2TJ561	560
R105	ERDS2TJ102	1K
R106	ERDS2TJ122	1.2K
R108	ERG1ANJ220	22
R301	ERDS2TJ473	47K
R302~305	ERDS2TJ272	2.7K
R306	ERDS2TJ102	1K
R307	ERDS2TJ821	820
R308	ERDS2TJ271	270
R310	ERDS2TJ562	5.6K
R311	ERDS2TJ102	1K
R312	ERDS2TJ153	15K

Ref. No.	Part No.	Value
R313	ERDS2TJ472	4.7K
R314	ERDS2TJ222	2.2K
R315	ERDS2TJ562	5.6K
R318	ERDS2TJ272	2.7K
R319	ERDS2TJ681	680
R320	ERDS2TJ272	2.7K
R321, 322	ERDS2TJ331	330
R323	ERDS2TJ562	5.6K
R324	ERDS2TJ272	2.7K
R327	ERDS2TJ272	2.7K
R337~339	ERDS2TJ103	10K
R401, 402	ERDS2TJ683	68K
R403	ERDS2TJ472	4.7K
R404	ERDS2TJ122	1.2K
R405	ERDS2TJ152	1.5K
R406	ERDS2TJ102	1K
R407	ERDS2TJ224	220K
R408	ERDS2TJ152	1.5K
R409	ERDS2TJ102	1K
R410	ERDS2TJ224	220K
R411	ERDS2TJ272	2.7K

Ref. No.	Part No.	Value
R412	ERDS2TJ681	680
R413	ERDS2TJ101	100
R414	ERDS2TJ471	470
R501	ERDS2TJ681	680
R502	ERDS2TJ271	270

Ref. No.	Part No.	Value
CAPACITORS		
C1, 2, 3	⚠ ECQG1223KZ	0.022
C4	ECEB1VU102	1000
C5	ECEA1CU470	47
C101	ECEA1HU010	1
C102	ECEA1CU470	47
C103	ECEA1EU3R3	3.3
C301	ECCD1H680K	68P
C302	ECQG1H104KZT	0.1
C303	ECKD1H103ZF	0.01
C304	ECEA0JU470	47
C305	ECEA1EU3R3	3.3
C306	ECKR1H473ZV	0.047
C308, 309	ECFR1E104ZFM	0.1
C311	ECKR1H223ZF	0.022
C312	ECKR1H102KB	0.001
C401, 402	ECQG1H223KZ	0.022
C403	ECEA1CU100	10
C601	ECFF1C104ZFM	0.1

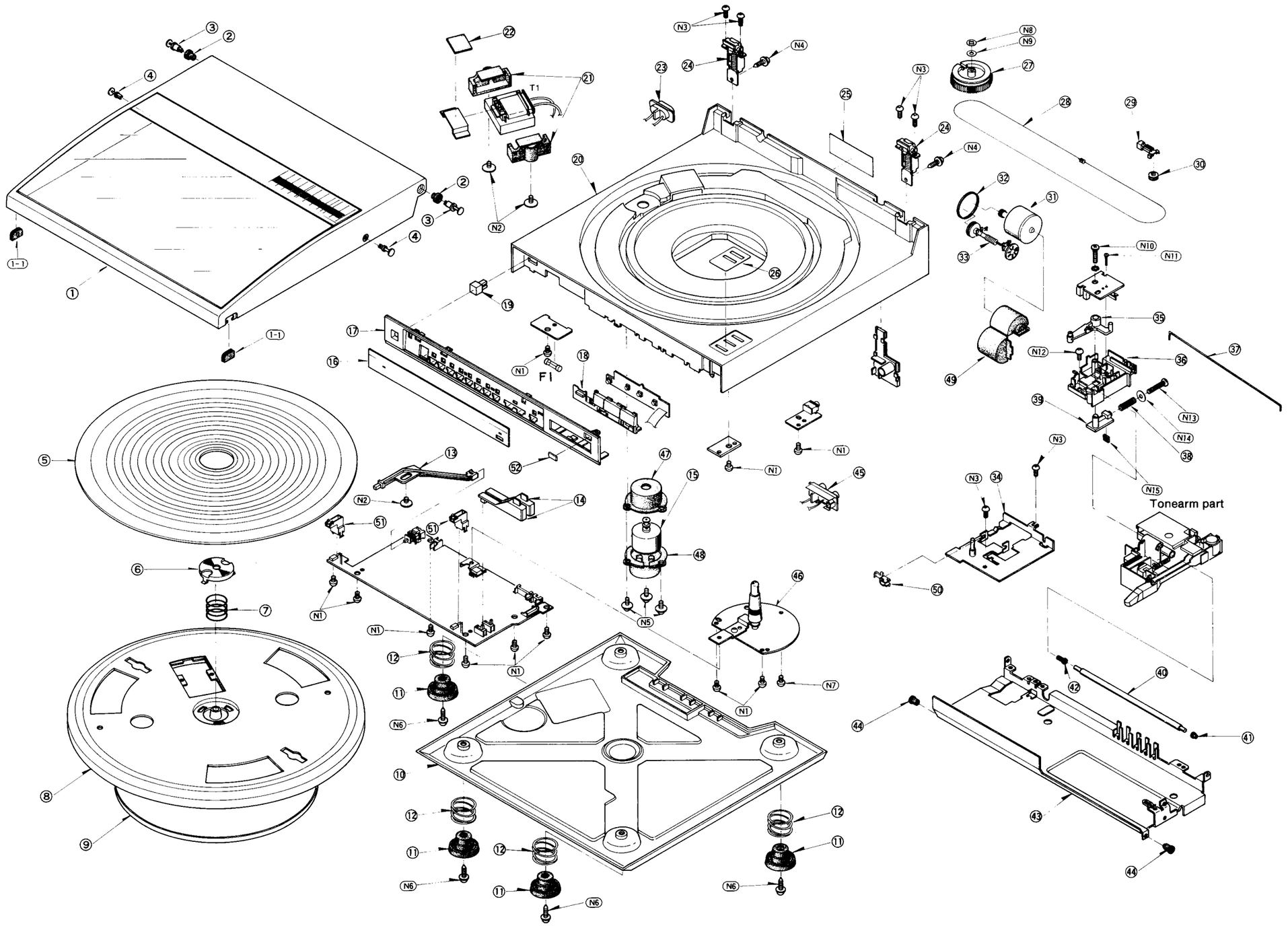
Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	AN78M12	Integrated Circuit
IC2	DN6838-S	Integrated Circuit
IC101	AN6610	Integrated Circuit
IC301	MN1402FPG	Integrated Circuit
IC401	SVIIR3702	Integrated Circuit
TRANSISTORS		
Q1	2SD638	Transistor
Q101	2SD1225	Transistor
Q301, 302, 303, 306	2SD636	Transistor
Q304	2SD892	Transistor
Q305, 310 311	UN1111	Transistor
Q401, 402	2SD1225	Transistor
Q403, 404	2SD947	Transistor
DIODES		
D1~4	⚠ SVD1SR35200V	Rectifier
D5	SVDSEL1121R	LED
D6	MA4056	Diode
D101	SVD1S1555TPB	Diode
D103	MA4039	Diode
D301	MA4062	Diode
D302	SVDSEL1121R	LED
D303	MA165	Diode
D502	MA165	Diode
VARIABLE RESISTORS		
VR101	EVN61AA00B24	Variable Resistor, 20kΩ (B)
VR102	EVN61AA00B53	Variable Resistor, 5kΩ (B)
VR301	EVN61AA00B54	Variable Resistor, 50kΩ (B)
VR501	EVN61AA00B53	Variable Resistor, 5kΩ (B)
SWITCHES		
S1	⚠ SFDSC02N02	Power
S301~304	EVQQS205K	Operation
S305, 306	SFDSHSW0739	Selector
S601	SFDSD05N01	Rest
PHOTO INTERRUPTER		
PC501	ON1186	Photo Interrupter
POWER TRANSFORMER		
T1 [EK, XL]	⚠ SLT48DT4E	Power Source
T1 [Other]	⚠ SLT48DT3E	Power Source
FUSE		
F1	⚠ XBAS2C04T1B	250V, T400mA
CABINET AND CHASSIS PARTS		
1	○ SFADJ11N01E	Dust Cover (1)
1	Ⓚ SFADJ11N21E	Dust Cover (1)
1-1	SFGZJ02N01	Cushion Rubber (2)
2	○ SFGZQ06N01	Rubber, Lutch (2)
2	Ⓚ SFGZC02N01	Rubber, Lutch (2)
3	○ SFUMD04N07	Lutch, Dust Cover (2)
3	Ⓚ SFUMC02N14	Lutch, Dust Cover (2)
4	○ SFUMQ06N08	Lutch, Dust Cover (2)
4	Ⓚ SFUMQ06N22	Lutch, Dust Cover (2)
5	SFTGJ01N01	Turntable Mat (1)
6	SFWEN05N01	Adaptor, 45 rpm (1)
7	SFQAN05N01	Spring, 45 rpm Adaptor (1)

Ref. No.	Part No.	Description
8	SFTEN05N01	Turntable Platter (1)
9	SFGBZ15R01	Belt, Turntable Platter (1)
10	SFAUJ01N01	Bottom Board (1)
11	SFGAJ02N01	Insulator (4)
12	SFQCC05N01	Spring, Insulator (4)
13	SFUMJ11N07	Rod, Power Switch (1)
14	SFKTJ11N03	Knob, Selector Switches (2)
15	SFMHJ11N01E	Motor Ass'y, Turntable Drive (1)
16	○ SFKKJ11N01	Ornament Plate, Front Panel (1)
16	Ⓚ SFKKJ11N21	Ornament Plate, Front Panel (1)
17	○ SFUMJ11S01	Front Panel (1)
17	Ⓚ SFUMJ11S21	Front Panel (1)
18	SFKTJ11N01	Operation Button (1)
19	SFKTC06N04	Knob, Power Switch (1)
20	○ SFACJ11N01	Cabinet (1)
20	Ⓚ SFACJ11N21	Cabinet (1)
21	SFGCQ06N02	Cushion Rubber, Power Transformer (2)
22	SFGZJ01X01	Rubber Spacer, Power Transformer (1)
23	⚠ SFDJHSC0516	AC Socket (1)
24	SFATJ11N01A	Hinge Ass'y (2)
25 [E, EC]	SFNNJ11S01	Name Plate (1)
25 [EK, XL]	SFNNJ11G01	Name Plate (1)
25 [EG]	SFNNJ11R01	Name Plate (1)
25 [other]	SFNNJ11Q01	Name Plate (1)
26	○ SFKKJ11N03	Label, Selector Switches (1)
26	Ⓚ SFKKJ11N23	Label, Selector Switches (1)
27	SFUML11R03	Wheel, Tonearm Drive (1)
28	SFUZC05N02E	Rope Ass'y, Tonearm Drive (1)
29	SFUMV05N23	Cap, Pulley (1)
30	SFUMC05N22	Pulley (1)
31	SFMHJ02N01R	Motor Ass'y, Tonearm Drive (1)
32	SFGBC10-01	Belt, Tonearm Drive Motor (1)
33	SFUMJ11N09A	Worm Gear Ass'y (1)
34	SFUPJ11N01E	Base Ass'y, Tonearm Drive Motor (1)
35	SFUMJ11N05	Lever, Rest Switch (1)
36	SFUMJ11N04	Base, Rest Switch (1)
37	SFUZC02N01	Rod, Rest Switch (1)
38	SFQA913-01	Spring, Adjustment Screw (1)
39	SFUMJ11N03	Base, Adjustment Screw (1)
40	SFXJQ06N01	Guide Rail (1)
41	SFGCC05N05	Cushion Rubber, Guide Rail (1)
42	SFGCQ06N01	Cushion Rubber, Guide Rail (1)
43	SFUKJ11N01E	Base Ass'y, Tonearm (1)
44	SFGCQ06N03	Cushion Rubber (2)
45	SFDJJ11N03E	Jack, Phono Output (1)
46	SFUKJ01N01A	Stator Frame Ass'y (1)
47	SFGCB71R02	Cushion Rubber (1)
48	SFGCJ11N03	Cover, Motor (1)
49	SFUMC02N07	Case, Motor (1)
50	SFUMJ02N12	Stopper (1)
51	SFUMJ11N02	Holder (2)
52	SFKKJ11N02	Label (T4P) (1)

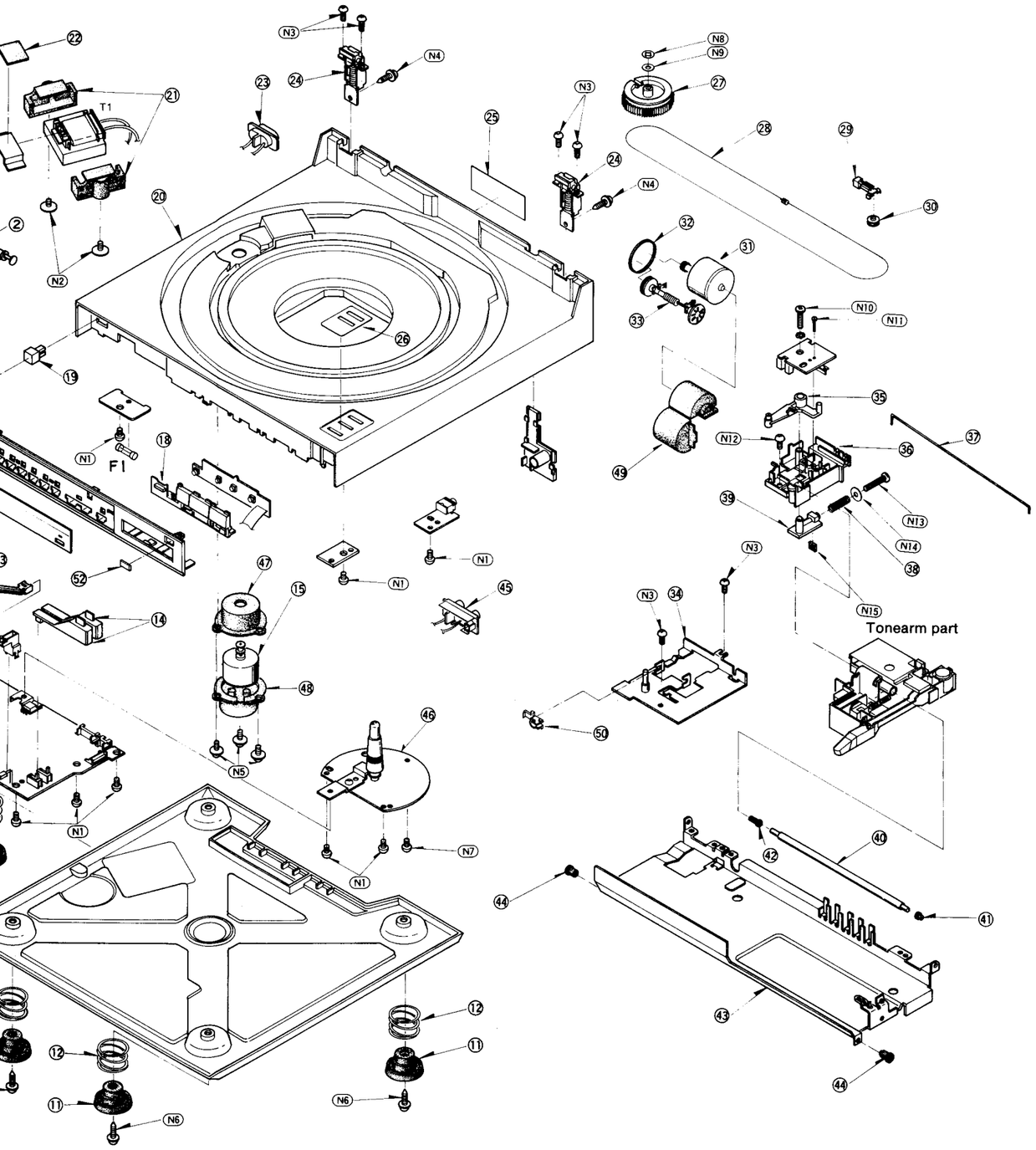
Ref. No.	Part No.	Description
TONEARM PARTS		
61	SFPKDJ1101E	Base, Tonearm (1)
62	SFPJKJ1101	Shaft (1)
63	SFPZBJ1101	Sheet, Shield Plate (1)
64	SFPSP00504	Spring (1)
65	SFDZJ11N02E	Solenoid Ass'y (1)
66	SFPSP00302	Spring, Adjustment (2)
67	SFPGML1101	Cushion Rubber (1)
68	SFPAMJ1101A	Tonearm Ass'y (1)
69	EPC-P30S	★ Cartridge (1)
70	EPS-30CS	★ Stylus (1)
SCREWS, WASHERS AND NUTS		
N1	XTV3+8G	Screw, ⊕3×8 (12)
N2	SFXGQ06N01	Screw (3)
N3	XTV3+6JFZ	Screw, ⊕3×6 (6)
N4	XTW3+14TFZ	Screw, ⊕3×14 (2)
N5	XTW3+10Q	Screw, ⊕3×10 (3)
N6	XTW3+14QFYR	Screw, ⊕3×14 (4)
N7	XYE3+EG10	Screw, ⊕3×10 (1)
N8	CSTW3	Washer, φ3 (1)
N9	Ⓢ XWE3A8BW	Washer, φ3 (1)
N10	XYC3+EJ20	Screw, ⊕3×20 (1)
N11	XTN2+12J	Screw, ⊕2×12 (1)
N12	XTV3+6J	Screw, ⊕3×6 (1)
N13	XSN3+20S	Screw, ⊕3×20 (1)
N14	XWE3D10	Washer, φ3 (1)
N15	XNC3HS	Nut, φ3 (1)
N16	SFPTN00301	Screw (1)
N17	SFXN623-1	Nut (1)
N18	SFPEV0Q601	Screw (1)
N19	XYN2+C4FZ	Screw (1)
ACCESSORIES		
A1 [Ei]	SFNUJ11I01	Instruction Book (1)
A1 [EK]	SFNUJ11G01	Instruction Book (1)
A1 [EG]	SFNUJ11R01	Instruction Book (1)
A1 [EF]	SFNUJ11F01	Instruction Book (1)
A1 [other]	SFNUJ11S01	Instruction Book (1)
A2	SFDHEQ1N01	Cord, Phono Output (1)
A3 [XL]	⚠ SJA163	Cord, AC Power (1)
A3 [EK]	⚠ SFDAC05G02	Cord, AC Power (1)
A3 [other]	⚠ SFDAC05E02	Cord, AC Power (1)
A4	SFDLJ11N01E	Ground Wire (1)
PACKING PARTS		
P1 [EF]	○ SFHPJ11C01	Carton Box (1)
P1 [other]	○ SFHPJ11M01	Carton Box (1)
P1 [EF]	Ⓚ SFHPJ11C21	Carton Box (1)
P1 [other]	Ⓚ SFHPJ11M21	Carton Box (1)
P2	SFHHJ11N01	Pad, Front (1)
P3	SFHHJ11N02	Pad, Rear (1)
P4	SFHDD04N01	Pad, Turntable Mat (1)
P5	SFHKJ01N01	Clamper, Turntable Platter (2)
P6	SFHKJ11N01	Spacer, Tonearm (1)
P7	SFYP41D32	Sheet, Dust Cover (1)
P8	SFYF32A35	Polyethylene Bag, Turntable Mat (1)

■ EXPLODED VIEW

• Cabinet and Chassis parts

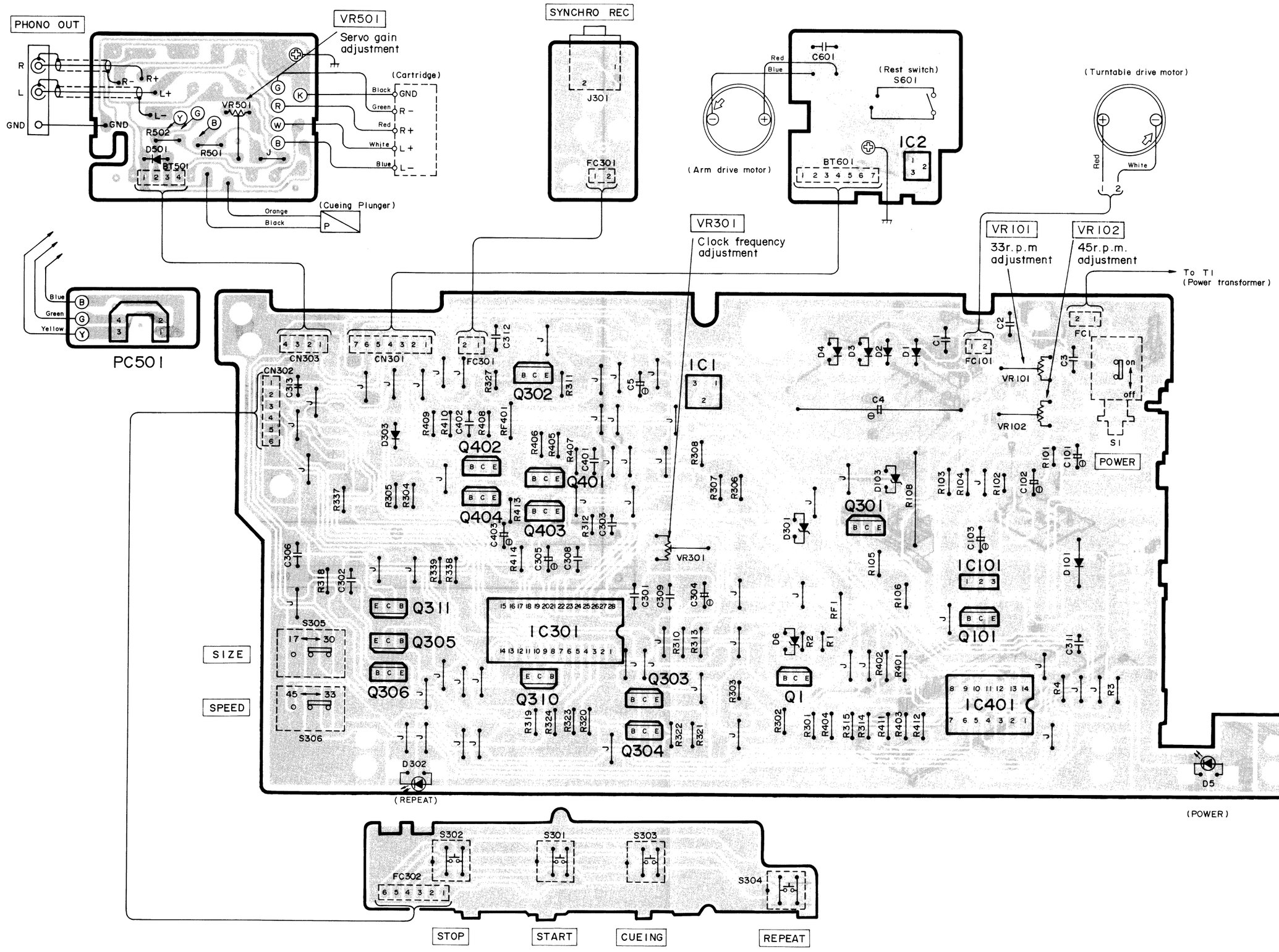


| | | |


Tonearm part
T1
F1

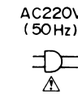
| | | |

■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



■ POWER S

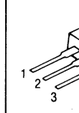
Product for Cor
[EH], [EF], [Ei]



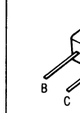
Product for Uni
and [XL] areas)

■ TERMINA

AN78M12

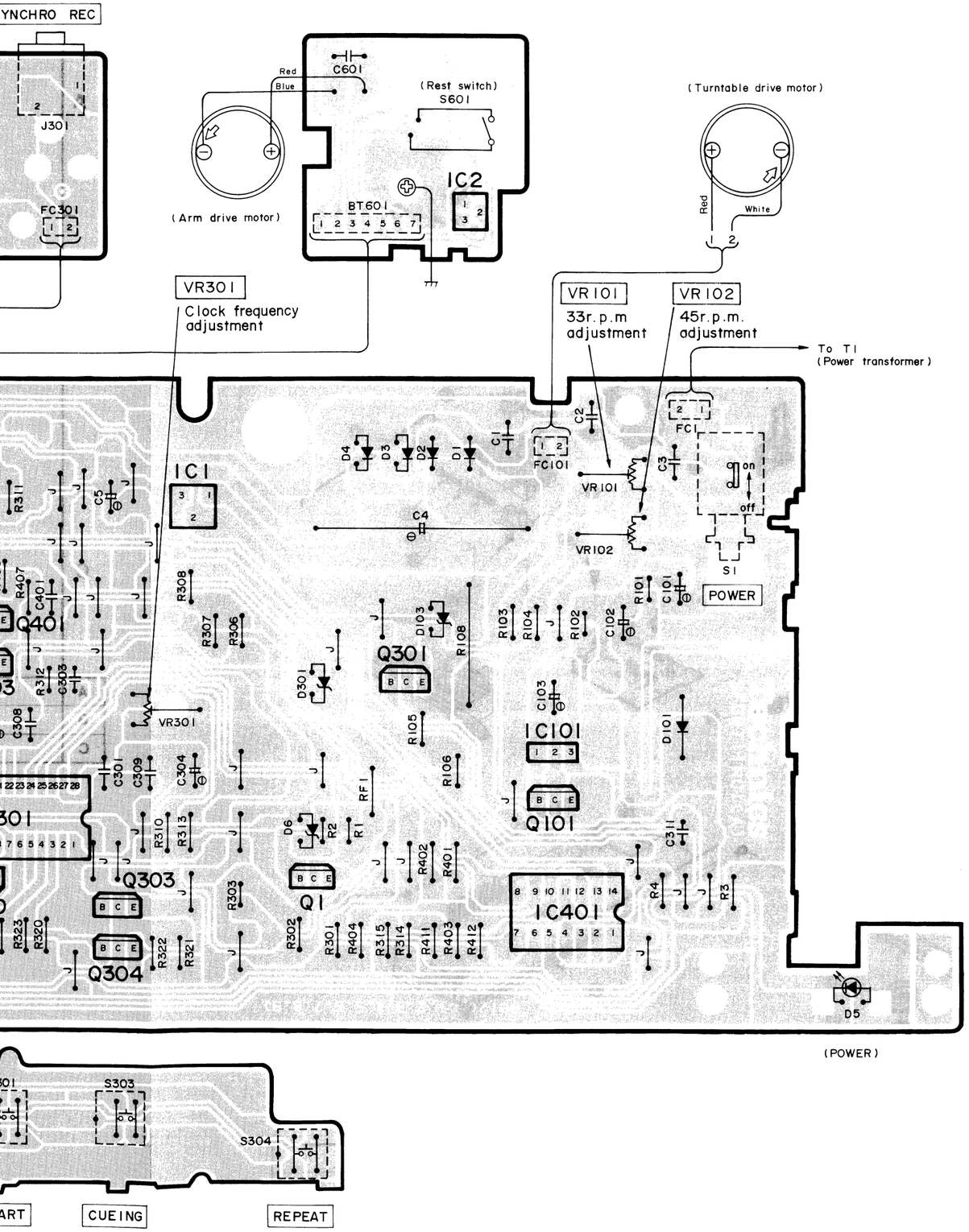


SVTDTA114, 2SD
2SD1225M, 2SD6



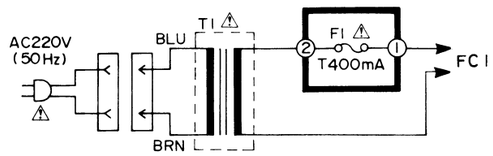
SVD1SS254

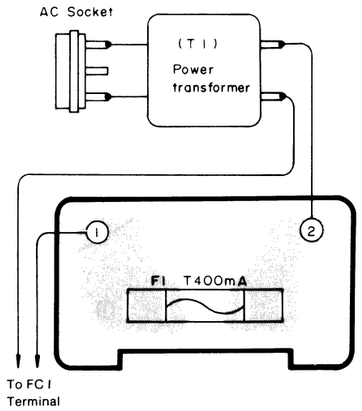
AM



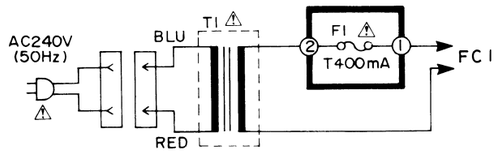
■ POWER SOURCE CIRCUIT

Product for Continental Europe ([E], [EG], [EB], [EH], [EF], [Ei] and [EC] areas.)



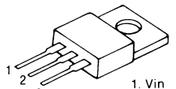


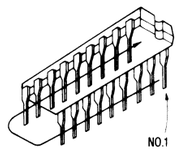
Product for United Kingdom and Australia ([EK] and [XL] areas)



■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

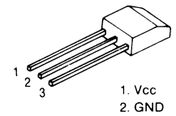
AN78M12



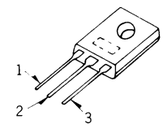


SVIIR3702	14 pin
MN1402	28 pin

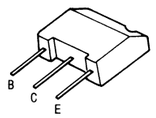
DN6838



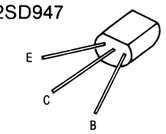
AN6610



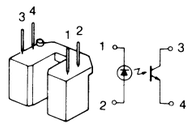
SVTDTA114, 2SD638, 2SD1225M, 2SD636



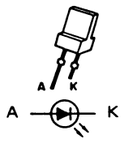
2SD892
2SD1226
2SD947



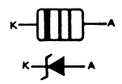
ON1186



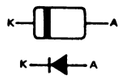
SVDSEL1121R



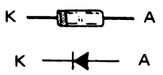
MA4056
MA4039
MA4062



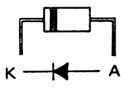
SVD1SS254



SVD1S1555TPB



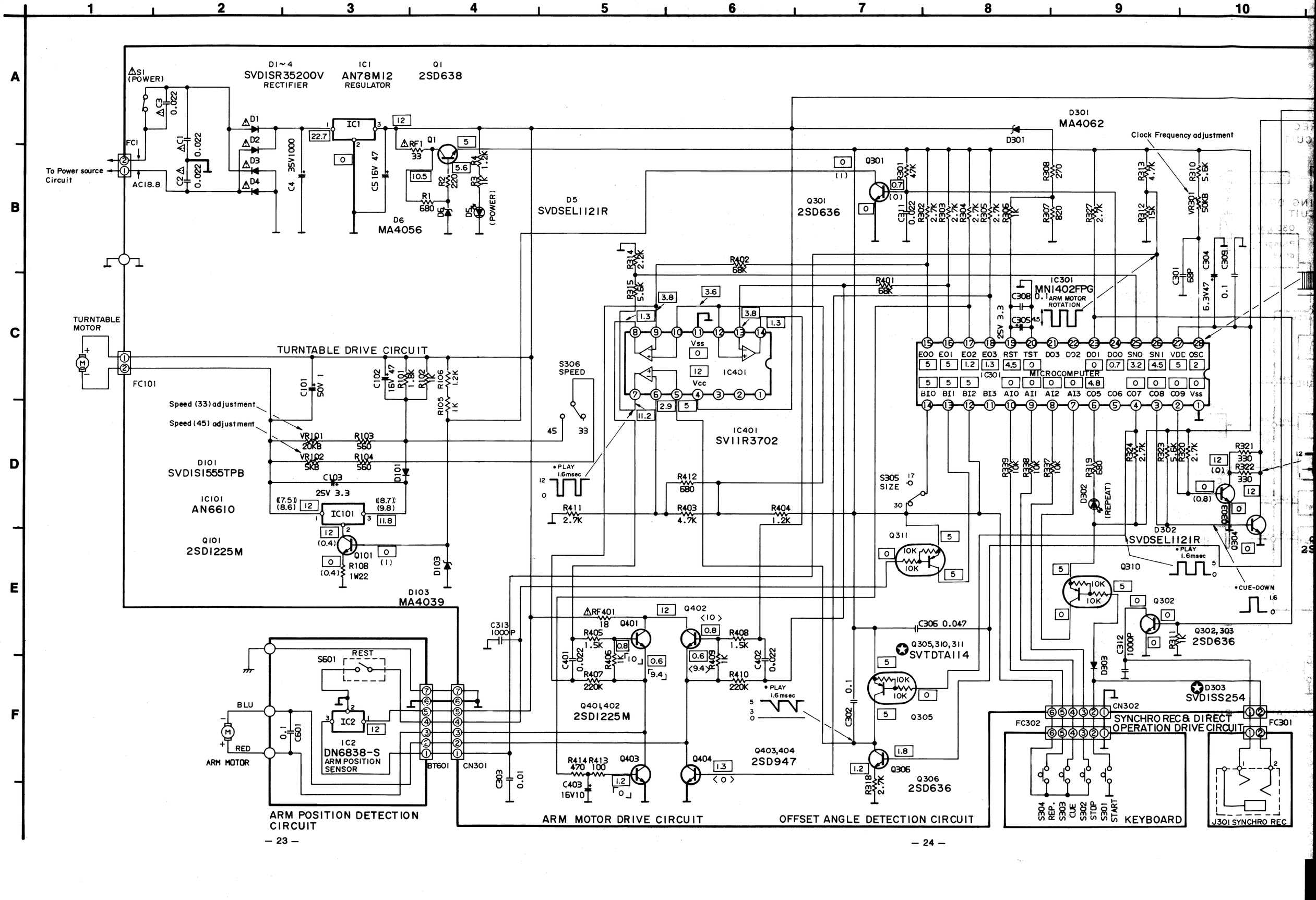
SVD1SR35200V

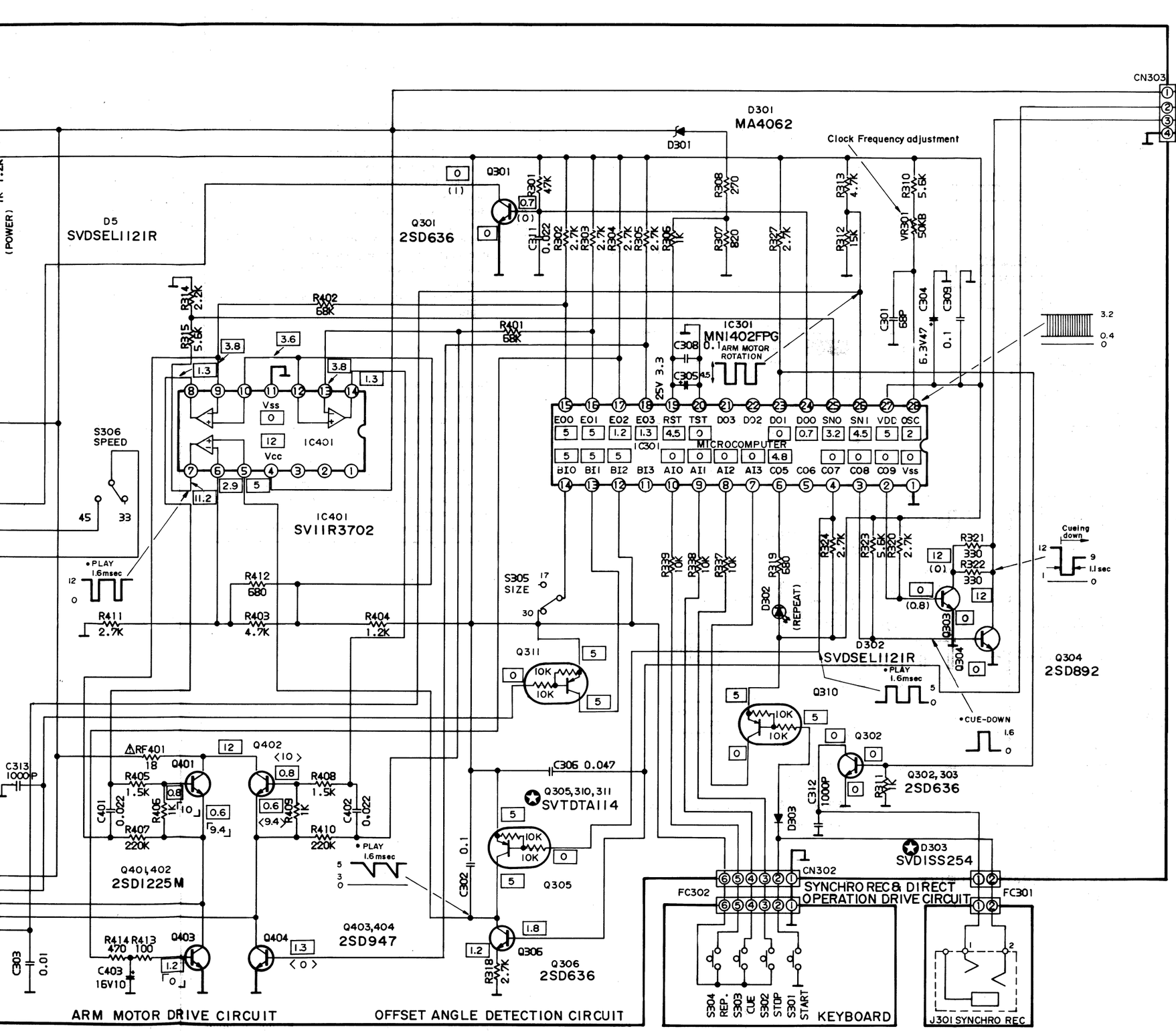


Caution!

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the legs of IC or LSI with the fingers directly.


D1~4
SVDISR35200V
RECTIFIER
IC1
AN78M12
REGULATOR
Q1
2SD638
SI (POWER)
FC1
To Power source Circuit
AC18.8
D1
D2
D3
D4
C3 0.022
C1 0.022
C2 0.022
C4 35V1000
C5 16V 47
RF1 33
R1 680
R2 220
R3 1K
R4 1.2K
D5 (POWER)
D6
MA4056
D5
SVDSEL1121R
D301
MA4062
Clock Frequency adjustment
Q301
2SD636
R301 47K
R302 2.7K
R303 2.7K
R304 2.7K
R305 2.7K
R306 2K
R307 820
R308 270
R312 15K
R313 4.7K
R310 5.6K
VR301 50KB
C311 0.022
C301 68P
C304
C309 0.1
IC301
MN1402FPG
ARM MOTOR ROTATION
C308 0.1
C305 45
25V 3.3
MICROCOMPUTER
EO0 EO1 EO2 EO3 RST TST DO3 DO2 DO1 DO0 SNO SNI VDC OSC
BIO BI1 BI2 BI3 AIO AI1 AI2 AI3 CO5 CO6 CO7 CO8 CO9 Vss
TURNTABLE MOTOR
FC101
TURNTABLE DRIVE CIRCUIT
Speed (33) adjustment
Speed (45) adjustment
VR101 20KB
VR102 5KB
R103 560
R104 560
C101 50V 1
C102 16V 47
R101 1.8K
R102 1K
R106 1.2K
R105 1K
C103 25V 3.3
D101
D103
MA4039
IC101
AN6610
Q101
2SD1225M
R108 1W22
S306 SPEED
45
33
• PLAY 1.6msec
R411 2.7K
R412 680
R403 4.7K
R404 1.2K
IC401
SV11R3702
R314 2.2K
R315 5.6K
R402 68K
R401 68K
S305 SIZE
R339 10K
R338 10K
R337 10K
R319 680
R324 2.7K
R323 5.6K
R320 2.7K
R321 330
R322 330
D302 (REPEAT)
D302
SVDSEL1121R
Q303
Q304
Q311
Q310
Q302
Q302, 303
2SD636
• CUE-DOWN
C312 1000P
R311 1K
D303
D303
SVDISS254
Q305, 310, 311
SVTDTA114
Q305
C305 0.047
C302 0.1
Q306
2SD636
R318 2.7K
CN302
SYNCHRO REC & DIRECT OPERATION DRIVE CIRCUIT
FC302
FC301
S304 REP.
S303 CUE
S302 STOP
S301 START
KEYBOARD
J301 SYNCHRO REC
S501 REST
IC2
DN6838-S
ARM POSITION SENSOR
BLU
RED
ARM MOTOR
C601 0.1
BT601
CN301
C313 1000P
C303 0.01
RF401 18
Q401
Q402
R405 1.5K
R406 1K
R407 220K
R408 1.5K
R409 1K
R410 220K
C401 0.022
C402 0.022
Q401, 402
2SD1225M
R414 470
R413 100
C403 16V10
Q403
Q404
Q403, 404
2SD947
ARM POSITION DETECTION CIRCUIT
ARM MOTOR DRIVE CIRCUIT
OFFSET ANGLE DETECTION CIRCUIT



■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with development of new technology.)

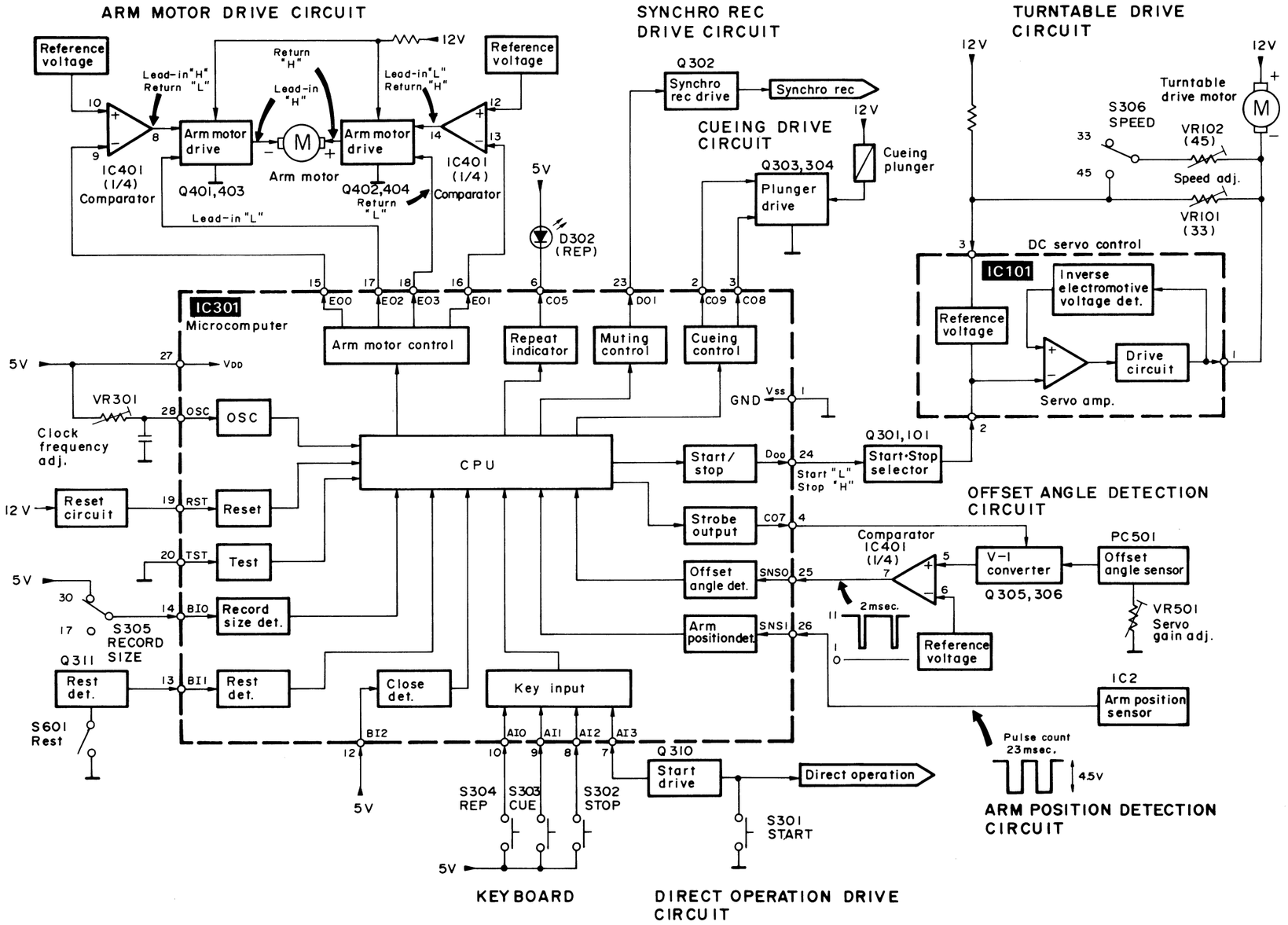
Notes:

1. **S1** : Power switch in "**on**" position.
2. **S301** : Start switch.
3. **S302** : Stop switch.
4. **S303** : Cueing control switch.
5. **S304** : Repeat switch.
6. **S305** : Record size select switch in "**30**" position.
7. **S306** : Speed select switch in "**33**" position.
8. **S601** : Rest switch in "**off**" position. (Tonearm is off the rest position.)
9. The voltage value and waveform are the standard values of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Therefore, the voltage value and waveform may include some error due to the internal impedance of the tester or the measuring unit.
   - * ▭ is the voltage when turntable is stop.
   - * ( ) is the voltage when turntable is in rotation.
   - * ⌐ ⌙ is the voltage when tonearm is in lead-in mode.
   - * < > is the voltage when tonearm is in return mode.
   - * (( )) is the voltage at 45 rpm.
10. —— Positive voltage lines.
11. Important safety notice:
    Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

* The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement parts list.

SL-J11

■ BLOCK DIAGRAM



■ DESCRIPTION OF MN1402FPG

No.	Mark	Description
1	Vss	Ground terminal
2	C09	Cueing control terminal ("H" only during cueing and cueing down)
3	C08	Cueing control terminal ("H" during cueing down—about 1.1 sec)
4	C07	Key scan output terminal
5	C06	Not used in this unit
6	C05	Repeat indicator drive terminal
7	AI3	Start key input terminal
8	AI2	Stop key input terminal
9	AI1	Cueing key input terminal
10	AI0	Repeat key input terminal
11	BI3	Not used in this unit
12	BI2	Cabinet open/close detecting terminal (unused and connected to +5V power supply)
13	BI1	Rest position detecting terminal ("H" when tonearm is at rest position)
14	BI0	Disc size detecting terminal ("H" when 30 cm disc is present)
15	E00	Tonearm drive motor control terminal (Arm servo)
16	E01	
17	E02	
18	E03	
19	RST	Reset terminal (micom is reset at "L")
20	TST	Test terminal (connected to ground)
21	D03	Not used in this unit
22	D02	
23	D01	Muting control
24	D00	Turntable start/stop select terminal ("H" at stop; "L" at start)
25	SNS0	Offset angle detection input terminal
26	SNS1	Arm position detecting input terminal
27	VDD	Power supply (+5V)
28	OSC	Oscillator (adjust clock frequency to 30μs±1μs)

Printed in Japan
850705500 Ⓢ TK